

# Section B. Planning, Budgeting and Forecasting

## (30% - Levels A, B, and C)

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### Strategic Planning

**Strategic Management** (The most important function)

- Is the development and implementation of a sustainable *competitive position* in which the firm's *competitive advantage* provides continued success.<sup>(BL)</sup>
- Sets *overall objectives* for an entity and guides the process of reaching those objectives.
- It is the responsibility of upper management.<sup>(GL)</sup>

**Strategic planning** (sometimes referred to as long-range planning or Strategic analysis)

The purpose of strategic planning is to

- guide the company in its efforts to achieve superior performance, competitive advantage, and maximized shareholder value.
- setting overall organizational objectives and goals and drafting strategic plans. It is a long term process aimed at charting the future course of the organization. <sup>(GL/CMA)</sup>
- is the design and implementation of the *specific steps* and processes necessary to reach the overall objectives.<sup>(GL)</sup>
- Strategic planning involves
  - a comprehensive look at an organization in relation to its industry, competitors, and environment.<sup>(IMA)</sup>
    - A systematic approach to analyzing threats and opportunities and examining why some organizational strategies have better competitive and profit prospects than others
  - drafting of strategic plans.
  - A sound framework for developing an effective operating budget.
  - An organizational learning opportunity for managers to think about strategies and how to best implement them
  - An exercise to **align** management decision making and actions with corporate strategies (e.g., to gain the buy-in of managers and show how their decisions and actions support corporate programs)
  - A basis for both financial and nonfinancial performance measures
  - A channel of communication among all levels of management about strategies, objectives, operational plans, and so on.
  - Guidance for approaching new situations
- It is the responsibility of upper management.<sup>(GL)</sup>
  - Although traditionally the responsibility of top management, all organizational members should be involved in the process. Well thought out strategic planning can help an organization adeptly navigate through turbulent times-both good and bad.<sup>(IMA)</sup>
  - An organizational learning opportunity for managers to think about strategies and how to best implement them



### Limitations of Strategic Planning

- The effort, time, and expense involved in the process
- The fact that planning based on predictions is not an exact science; due to a variety of factors, plans may prove to be incorrect and fail
- The potential for resistance to change resulting from entrenched ways of doing things
- The risk that planning can become a bureaucratic exercise devoid of fresh ideas and strategic thinking

Strategic planning is **based on**:

- identifying and specifying ultimate organizational goals and objectives (usually addressed first),
- evaluating the strengths and weaknesses of the organization, and
- assessing risk levels,
- forecasting the future direction and influences of factors relevant to the organization such as:
  - market trends,
  - changes in technology,
  - international competition, and
  - social change.
- deriving the best strategy for reaching the objectives given the organization's strengths and weaknesses and the relevant future trends.
- The time frame for strategic planning is normally five to ten years. It may, however, be longer.

Setting ultimate objectives for the firm is a necessary prelude to **developing strategies** for achieving those objectives. **Plans** and budgets are then needed to implement those strategies.

Strategic management and strategic planning are thus *closely linked*. By their nature, strategic management and strategic planning have a long-term planning horizon.<sup>(GL)</sup>

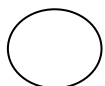
The final step is to derive the best **strategy** for reaching the objectives.

### Strategy

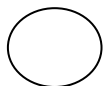
**Strategy** is the **organization's plan** to

- match its **strengths/capabilities** with the opportunities in the marketplace to accomplish its desired goals over the short and long term.
- addresses the objectives of the organization;
- locates potential markets;
- considers the impact of events, competitors, and the economy;
- addresses the structure of the organization; and
- evaluates the risks of alternative strategies. <sup>(IMA)</sup>  
set of actions taken by managers of a company to increase the company's performance.

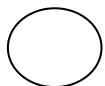
### Steps in the Strategic Planning/Management Process (five-stage process):



**Step 1** Defining/selecting the company's mission and addressing the key corporate goals.

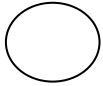


**Step 2** Analyzing the organization's external factors & the internal operating environment .



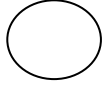
**Step 3** Formulating and selecting strategies (SWOT analysis) that, Based on the results of the situational analysis, upper management develops a group of strategies describing how the mission will be achieved.





**Step 4 Developing and implementing the chosen strategies.**

Strategic plans are implemented through the execution of component plans at each level of the entity.



**Step 5 Strategic controls and feedback** are used to monitor progress, isolate problems, and take corrective action. Over the long term, feedback is the basis for adjusting the original mission and objectives.

M-A-S-I-C



**Step 1 Defining the company's mission and addressing the key corporate goals.**

**The Mission Statement**

- Provides the guiding compass for an organization.
- Provides the context within which its strategies will be formulated.
- Summarizes the entity's reason for existing.
- It provides the framework for formulation of the company's strategies.
- succinctly articulates an organization's business position.
- expresses how the organization will continuously move toward its vision and provides a clear view of what the firm is trying to accomplish for its customers.

**Characteristics of Effective Missions**

- When they consist of a single sentence.
- Stated in general terms (very broad).
- A mission statement answers this question: Why are we in business? In answering this question, a mission statement must be:
  - accurate,
  - easily understood,
  - motivating, and
  - transferable into action.
- It needs to be **flexible** and ready to adapt to changing conditions and new ways of serving its customers' needs.

**The mission statement includes four components:**



**1) A statement of the company's "rreason to be."**



**2) Its vision, or a statement of a desired future stat.**



**3) A statement of the organization's values.**



**4) A statement of its major goals.**

- In order for plans to be as effective as possible, they must be **coordinated among the different units** and departments in the company so that they are in alignment with the larger goals of the company.



### Types of Plans and General Principles

- **Strategic Plans (Long-Term Plans)**
- **Intermediate Plans**
- **Short-Term Plans**

### Types of Organizations Goals

- Strategic Goals
- Tactical Goals
- Operational Objectives

### Strategic Plans (Long-Term Plans)

- **Strategic plans** are broad, general, long-term plans (usually five years or longer) and are based on the objectives of the organization.
- The results of this annual planning process are usually used, along with tactical and operational planning, in **developing the budget for the coming year**.
  - In this way, the strategic plan is used to determine resource allocation within the company.
- Strategic planning is **directional**, rather than operational. This means that the company focuses on where it wants to go instead of specifically how it will get there.

**Note:** The longer the time frame of the plan, the higher up in the organization the planning should be done. Similarly, the shorter the time frame of the plan, the lower in the organizational hierarchy the planning should be prepared.

### Characteristics of successful strategic plans

A successful strategic plan is one that:

1. Assists the organization in achieving its long-term goals and objectives.
2. It has well-defined goals consistent with the strategic plan and the mission from which the plan we derived.
3. It also has SMART objectives, objectives that are:
  - Specific
  - Measurable
  - Achievable
  - Realistic
  - Timely

### Strategic Goals

- established at the highest levels of an organization, part of the firm's strategic plan, long range in nature.

*Strategic goals require additional goals to be achieved at the tactical level.*

### Intermediate Plans

The **strategic plan** is then broken down into **intermediate or tactical plans** (one to five years), which are designed to implement specific parts of the strategic plan.

- Upper and middle managers develop tactical plans.
- Operational plans are developed by middle and lower-level managers.
  - For example, the board of directors **should not** be involved in developing weekly work plans for an assembly line.

### Tactical Goals

- established at middle and lower levels of an organization.
- established by business (also referred to as responsibility centers and strategic business units {SBUs}) or functional departments



## Short-Term Plans

- All shorter-term plans need to **work toward the strategic** plans of the company.
- **Short-term or operational plans** are the primary basis of **budgets**.
- Operational plans refine the overall objectives from the strategic and tactical plans in order to develop the **programs, policies**, and performance expectations required to achieve the company's long-term strategic goals.
- Short-term objectives and the tactics to achieve them *should flow directly* from the organization's strategic plan and *should be designed to achieve* the goals and objectives set forth in the strategic plan. The short-term objectives would be *milestones* along the road to the achievement of the long term goals.

Q. A firm's statement of broad objectives or mission statement should accomplish all of the following except

- A. Outlining strategies for technological development, market expansion, and product differentiation.
- B. Defining the purpose of the company.
- C. Providing an overall guide to those in high-level, decision-making positions.
- D. Stating the moral and ethical principles that guide the actions of the firm.

Answer (A) is correct. The determination of organizational objectives is the first step in the planning process. A mission statement is a formal, written document that defines the organization's purpose in society, for example, to produce and distribute certain goods of high quality in a manner beneficial to the public, employees, shareholders, and other constituencies. Thus, a mission statement does not announce specific operating plans. It does not describe strategies for technological development, market expansion, or product differentiation because these are tasks for operating management.

Analyzing and reviewing departmental budgets is an aspect of operational management and not a part of strategic planning. Analysis of the current month's budget variances is not an aspect of strategic planning. Setting the target product mix and production schedule for the current year is not a concern of strategic analysis because it is a short-term activity. (GL/CMA)

### Importance of aligning long-term objectives with other tactical short term plans and budget

Explain why short-term objectives, tactics for achieving these objectives, and operational planning (master budget) must be congruent with the strategic plan and contribute to the achievement of long-term strategic goals.

### Alignment of Tactics with Long-Term Strategic Goals

Strategic plan precedes an operational plan; the strategic plan provides the foundation upon which the more detailed operational plan is developed. In that sense, strategic plans are "macro" plans and operational plans are "micro" plans.



## Importance of Strategy in Budgeting

A prerequisite for budget development is a strategic analysis that matches an entity's capabilities with available marketplace opportunities.

### Strategy

A firm's **strategy** is the *path* it chooses for attaining its long-term goals and mission.(B).

**Strategic analysis** is the basis for both long-term and short-term planning. (IMA)  
In turn, these plans lead to the formulation of budgets.

**Budgets** provide feedback to managers about the likely effects of their strategic plans. Managers use this feedback to revise their strategic plans.(H)

**Strategy** is the **organization's plan** to match its strengths with the opportunities in the marketplace to accomplish its desired goals over the short and long term.  
**Strategy** is the starting point in preparing its plans and budgets.

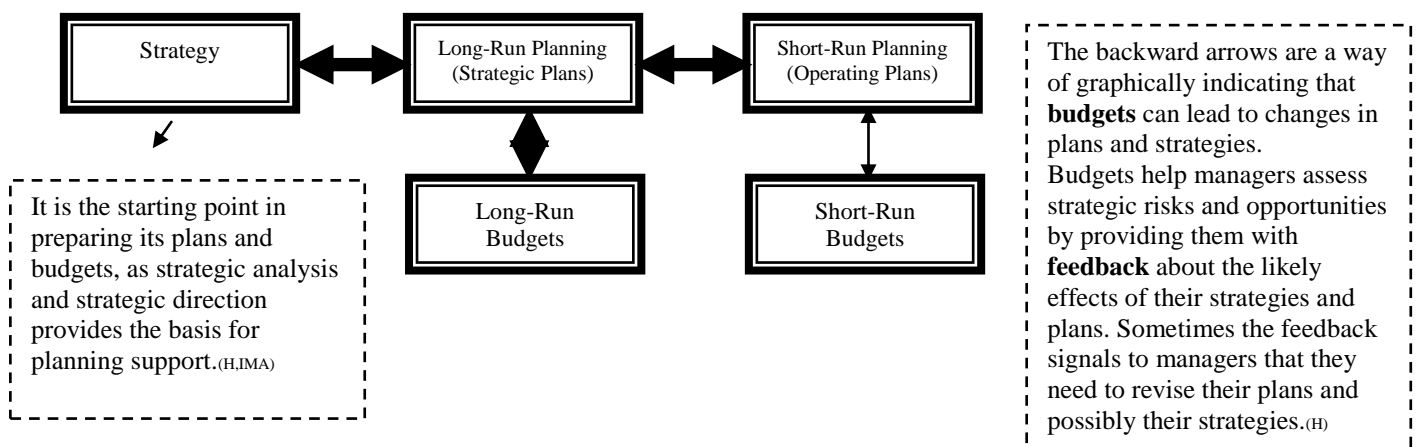
### Budgeting

**Budgeting** is a common accounting tool that companies use for implementing strategy, as budgeting facilitates movement toward strategic goals. (H,IMA)  
A **budget** should start with a careful review and study of the organization's strategic plan. The objective is to build a budget to achieve the organization's strategic goals and objectives. (B)

By not relying on its strategic plan, an organization very likely would not be able to fully utilize its strengths and take full advantage of opportunities. Ignoring the strategic plan can result in **not** adequately funding the projects and initiatives that are critical to achieving results aside from the daily operations of taking and fulfilling sales orders. (B)

## Strategy, Planning, and Budgets

Strategic plans are expressed through long-run budgets and operating plans are expressed via short-run budgets. But there is more to the story! The exhibit shows arrows pointing backward as well as forward. (H)

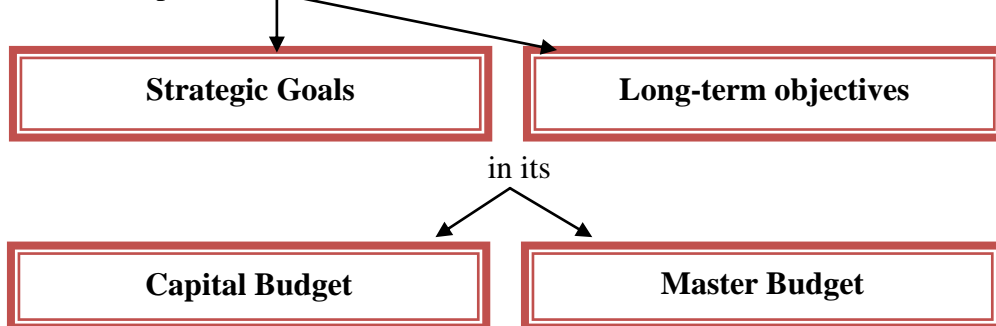




## Resource Allocation

All entities have a finite amount of resources and want to make the most of their capital. The allocation of scarce resources among competing opportunities is accomplished through implementation of a strategy.<sup>(IMA)</sup>

An organization expresses its

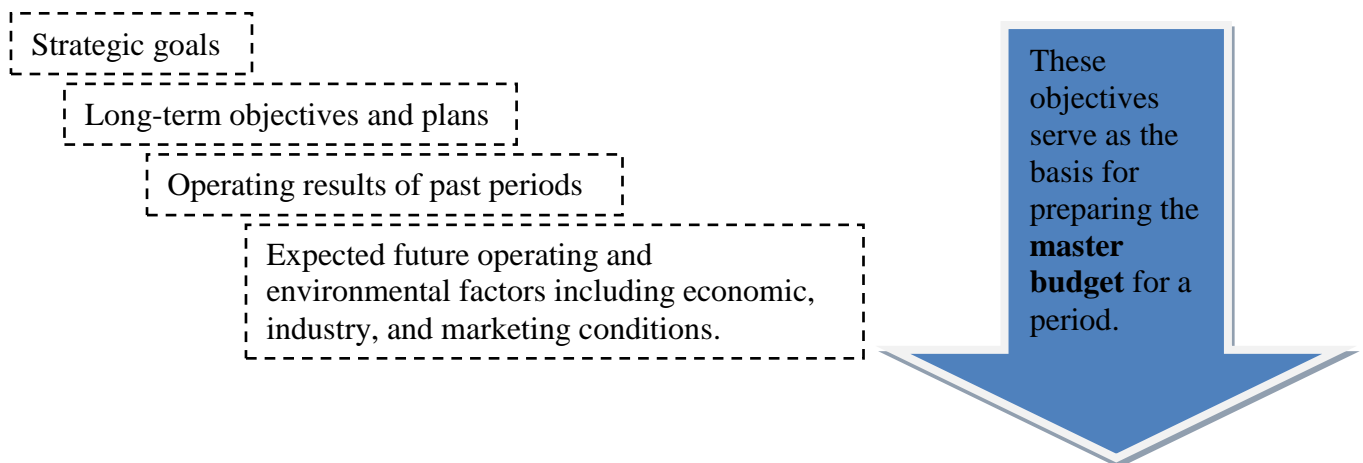


The **strategic goals and objectives** of the organization are, ultimately, accomplished through a focused set of initiatives and projects that creates value for the organization.

### Short-Term Objectives and the Master Budget

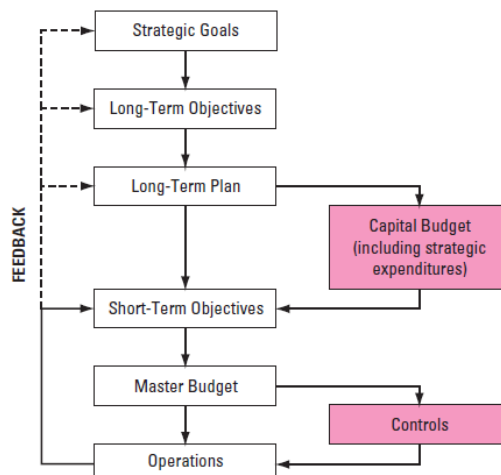
**Short-term objectives** are goals for the coming period, which can be a **month**, a **quarter**, a **year**, or any length of time desired by the organization for planning purposes.<sup>(B)</sup>

An organization determines **short-term objectives for the budget period based on**



A **master budget** translates the organization's **short-term objectives** into action steps. A master budget reflects an organization's operating and financing plans for the upcoming budget period.<sup>(B)</sup>

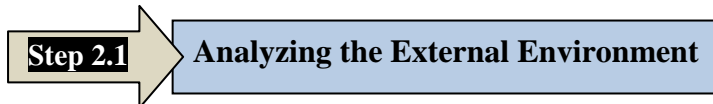
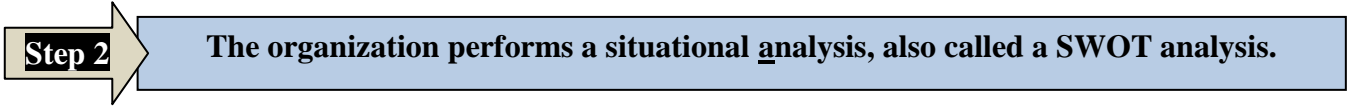
The relationships among strategic goals, long-term objectives and plans, short-term goals, budgets, operations, and controls. (next CSO discuss the master budget in depth)





**Efficient allocation of organizational resources during the budgeting process can be achieved through:**

- The process of developing the operating budgets for the individual units in an organization.
- Making decisions about the most profitable way to utilize the resources available.



After defining the company's mission and developing its goals, the first step in developing a strategic plan is to analyze the forces that shape the industry in which the company operates and the competition within that industry in order to understand the **opportunities** available to the firm and any **threats** confronting the firm that can affect it in the pursuit of its mission. Understanding its opportunities and threats will enable the company to outperform the competition.

#### **External factors (recognition of OLT)**

- Are external or environmental opportunities and threats that face the organization.
  - **Opportunities** are those things that would enhance the organization's competitive position and profitability.
  - **Threats** are *risks* that, if they occur, would be detrimental to the organization's competitive position and profitability.

The specific external factors affecting an organization's strategy are determined by its industry and broader environment. They are identified by considering

- a) **Macroenvironment** factors (economic, demographic, political, legal, social, cultural, and technical) and
- b) **Microenvironment** factors (suppliers, customers, distributors, competitors, and other competitive factors in the industry).

#### **(LOS) External factors that should be analyzed & recognition of OLT**

Identify the external competitive environment factors that should be analyzed during the strategic planning process and understand how this analysis leads to recognition of organizational opportunities, limitations, and threats

Three environments should be examined, and the three environments are interrelated and shaping the organizational strategy:

1. The **industry** in which the company operates,
  - Market forces, industry trends, and competition.
2. The **country** or the **national environment** in which the company operates as well as the international environment,
3. And the wider environment, or **macroenvironment** in which the company operates.
  - Economic, demographic, political, legal and regulatory factors, social, cultural, and technical changes.
  - Stakeholder groups and their social concerns.
  - Globalization trends, emerging markets, and nongovernment organizations (e.g., United Nations, World Bank, etc.).





**Opportunities** arise when companies can *leverage* external conditions to develop and implement strategies that will make them more profitable.

**Threats** include conditions in the external environment that pose a *danger* to profitability

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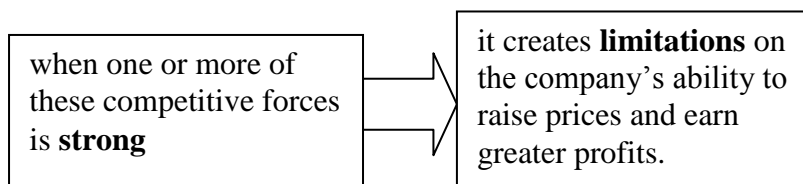
Once the boundaries of an industry have been identified, managers face the task of analyzing competitive forces within the industry environment in order to identify opportunities and threats. *Michael E. Porter's* well-known framework, known as “**The Five Forces Model**,” has helped managers with this analysis. An extension of his model, shown in Figure 2.2, focuses on six forces that shape competition within an industry:

- (1) the risk of entry by potential competitors,
- (2) the intensity of rivalry among established companies within an industry,
- (3) the bargaining power of buyers,
- (4) the bargaining power of suppliers,
- (5) the closeness of substitutes to an industry's products and
- (6) the power of complement providers (Porter did not recognize this sixth force).

Michael Porter developed a model examining five forces and their collective role in determining the strength of competition and profitability. It includes an analysis of the five competitive forces that determine long-term profitability as measured by long-term return on investment.

#### Porter's Arguments:

- As the **forces grow stronger**, they **limit** the ability of established companies to raise prices and earn greater profits.



According to Porter, the five forces that shape competition within an industry are:

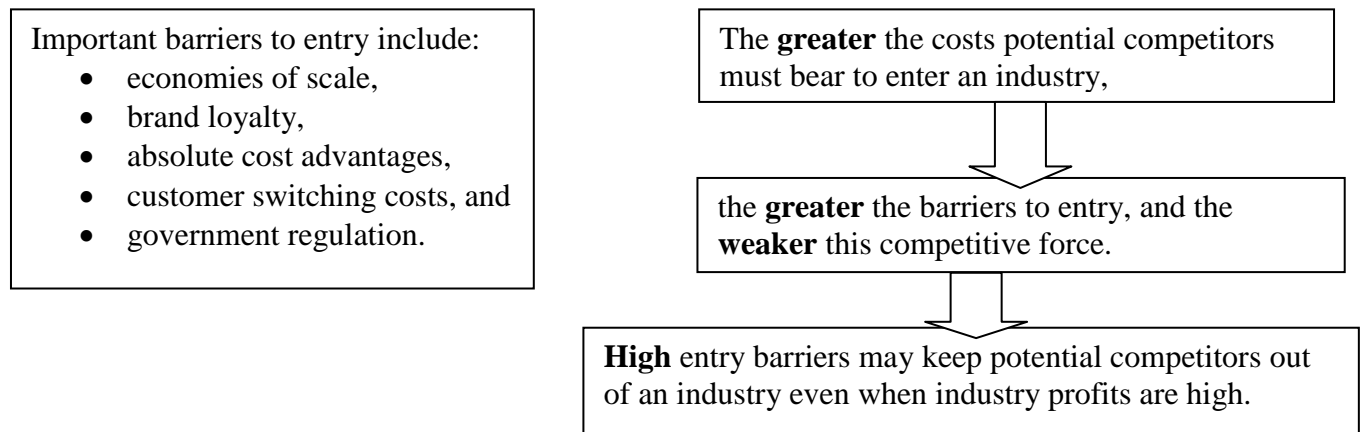


## 1) The risk of entry by potential competitors.

### Definition

**Potential competitors** are companies that are **not** currently competing in an industry, but have the **capability** to do so if they choose.

The risk of entry by potential competitors is a function of the height of barriers to entry, that is, factors that make it costly for companies to enter an industry.



The **greater** the costs potential competitors must bear to enter an industry,

the **greater** the barriers to entry, and the **weaker** this competitive force.

**High** entry barriers may keep potential competitors out of an industry even when industry profits are high.

### Note:

The **most favorable industry condition** is one in which:  
**entry barriers are high** and **exit barriers are low.**

When the **threat** of new entrants is **minimal** and **exit is not difficult**,

**Returns are high, and risk is reduced in the event of poor performance.**

**Low entry barriers** keep long-term **profitability low** because new firms can enter the industry,

**increasing competition** and **lowering prices** and the **market shares** of existing firms.

## 2) The intensity of rivalry among established companies within an industry.

### Definition

Rivalry is the *competition among companies in an industry to gain market share from one another.*

Weapons in the competition include:

- prices,
- product design,
- promotional efforts,
- selling efforts, and
- service and sup-port after the sale.

The intensity of rivalry among established companies within an industry is largely a function of four factors:

- (1) industry competitive structure,
- (2) demand conditions,
- (3) cost conditions, and
- (4) the height of exit barriers in the industry.



### 3) The bargaining power of buyers.

- If buyers such as large discount store chains have the ability to **bargain down prices** or to demand better product quality and service that would increase manufacturers' costs, an industry can become less profitable. Therefore, **powerful buyers are a threat**.

### 4) The bargaining power of suppliers.

- If suppliers have the ability to **raise the prices of inputs** such as materials or direct labor (through labor unions, for instance) or to lower quality, it will raise the costs of companies in the industry. So **powerful suppliers are also a threat**.

### 5) The closeness of substitutes to an industry's products.

- **The existence of close substitutes** for an industry's product is a **threat** because it limits the prices that can be charged for the product, the less attractive the industry is to potential entrants.
- If there are **few or no close substitutes**, then companies have the **opportunity** to raise prices without fear that their customers will switch to a substitute.

#### Linkage of the Five Forces to Strategic Planning

The collective strength of the five competitive forces determines the ability of firms to earn rates of return on investment in excess of the cost of capital. In industries where the strength of the five forces is **favorable** (e.g., pharmaceuticals), *profits are attractive*. Understanding industry structure is a critical starting point during strategy formulation. The strongest force or forces assume increased importance during strategic planning and strategy formulation.

#### 2. Analyzing the **national and international environment** includes assessing:

- domestic as well as international political risk:
  - government expropriation and war
- the impact of **globalization** (migration to international operations) on competition within the industry

#### 3. Analyzing the **macroenvironment (macroeconomic) factors** includes assessing:

- **Economic condition** will affect demand and thus sales revenue and net income in the future.
  - Economic growth
    - leads to more consumer spending and gives companies the opportunity to expand their operations and increase their profits.
  - Economic recession
    - leads to a reduction in consumer spending and, in a mature industry, may cause price wars.
- The level of **interest rates** affect any company's cost of capital and thus its ability to raise capital and invest and expand.
  - Rising interest rates will cause demand to decrease
  - Falling interest rates will cause demand to increase.
- **Changes in currency exchange** rates affect the competitiveness of companies in international trade.
  - A declining local currency creates opportunities for increased international sales while decreasing foreign competition.
  - An increasing local currency causes the opposite condition.



## Step 2.2

### Analyzing the Internal Environment

Analyze the organization's internal operating environment to identify the organization's strengths and weaknesses.

#### Internal factors (recognition of SWC)

- Are the organization's strengths and weaknesses.
  - **Strengths** are those things that would enhance the organization's competitive position and profitability;
  - **Weaknesses** are those that *detract* from its competitive position and profitability.

**Distinctive competencies** are the firm-specific strengths of a company. Valuable distinctive competencies enable a company to earn a profit rate that is above the industry average.

- The distinctive competencies of an organization arise from its:
  - **resources** (its financial, physical, human, technological, and organizational assets) and
  - **capabilities** (its skills at coordinating resources and putting them to productive use).

Therefore, Internal analysis focuses on reviewing the:

- Resources,
- Capabilities, and
- Competencies of a company.

#### Competitive Advantage (efficiency, quality, innovation, and responsiveness to customers).

- A company is said to have competitive advantage when it is *more profitable* than the average company in its industry.
  - It has a sustained competitive advantage if it is able to continue **having above-average profitability over several years** as this is the primary objective of strategy.
- In order to achieve a competitive advantage, a company needs to pursue strategies that build on its existing resources and capabilities and formulate strategies that build additional resources and capabilities (develop new competencies).

## Step 3

### Formulating Strategies (SWOT Analysis also called situational analysis).

Formulating and selecting strategies that, consistent with the organization's mission and goals, will *optimize* the organization's strengths and *correct* its weaknesses and limitations for the purpose of *taking advantage* of external opportunities while countering external threats (SWOT analysis); SWOT analysis consists of generating a series of strategic alternatives that could be pursued given the company's strengths, weaknesses, opportunities and threats in order to select the strategies that will do the best to align the company's resources and capabilities to the demands of its environment.

#### Four Generic Competitive Strategies

The value creation frontier can be reached by choosing among four generic competitive strategies:

- cost leadership,
- focused cost leadership,
- differentiation, and
- focused differentiation.



## **Developing a Competitive Strategy**

In developing a sustainable competitive position, each firm purposefully or as a result of market forces arrives at one of the two competitive strategies: cost leadership or differentiation

### **(1) Cost Leadership to achieve competitive advantage**

#### **Cost Leadership**

Cost leadership is a strategy in which a firm outperforms competitors in producing products or services at the lowest cost for these firms, cost management is critical.<sup>(B)</sup>

**Cost Leader** (A company using cost leadership)

- Firms known to be successful at cost leadership are typically very large manufacturers and retailers, such as Wal-Mart, Texas Instruments, and Dell.
- normally has a relatively large market share and tends to avoid niche or segment markets by using the price advantage to attract a large portion of the broad market.

#### **Cost Leader achieve Higher profits through Lower Prices**

- They have been profitable and have grown over the years on the basis of providing quality products or services at low prices by judiciously managing their costs.<sup>(H)</sup>
- makes sustainable profits at lower prices, thereby limiting the growth of competition in the industry through its success at reducing price and undermining the profitability of competitors, which must meet the firm's low price.

#### **A potential weakness of the cost leadership strategy**

- is the tendency to cut costs in a way that undermines demand for the product or service
  - for example, by deleting key features, This will lead to customer dissatisfaction and in turn, to decreases in demand and sales. The resulting decreased profitability.
  - The cost leader remains competitive only so long as the consumer sees that the product or service is (at least nearly) equivalent to competing products that cost somewhat more.
- The danger in this strategy is that competitors may find ways to lower their cost structures, too.

**(2) Focused cost leadership**, or competing within a narrow market segment using the strategy of cost leadership.

**(3) Differentiation strategy** (sometimes called: **product leadership**) to achieve competitive advantage

#### **Differentiation**

The differentiation strategy is implemented by creating a product or service that is unique/ unusual in some important way, usually:

1. higher excellent quality,
2. customer service product features, responsiveness to customer needs, or
3. superior innovation.

#### **Differentiator**

- A differentiator can charge a **higher price** than its closest competitors because of its perceived advantages to the customer.



- Firms known to be successful differentiator are cosmetics, fashion, and pharmaceutical firms, compete on the basis of product leadership, in which the unusual or **innovative** features of the product make the firm successful.
  - For these firms, the critical management concern is maintaining product leadership through product development and marketing.<sup>(B)</sup>
- Most industries, including, consumer electronics, and clothing, have differentiated firms. The appeal of differentiation is especially strong for product lines for which the perception of quality and image is important, as in cosmetics, jewelry, and automobiles.
  - Tiffany, Bentley, Rolex, Maytag, and BMW are good examples of firms that have a differentiation strategy, Apple Inc., the maker of iPods and iPhones, and Johnson & Johnson, the pharmaceutical giant.

### Differentiator achieve Higher profits differentiated products

- They generate their profits and growth on the basis of their ability to offer differentiated or unique products or services that appeal to their customers and are often priced higher than the less-popular products or services of their competitors.

### Sources of differentiated products

- For instance, differentiation on the basis of innovation requires an effective **R&D function**.
- The differentiator must **control its costs** so that the price of the product is not greater than its customers will pay, but it must not minimize them so much that it loses its source of differentiation.

#### A weakness of the differentiation strategy

Is the firm's tendency to undermine its strength by attempting to lower costs or by ignoring the necessity of having a continual and aggressive marketing plan to reinforce the differentiation. If the consumer begins to believe that the difference is not significant, lower-cost rival products will appear more attractive. is (at least nearly) equivalent to competing products that cost somewhat more.

The danger with a differentiation strategy is that competitors may imitate successful differentiation, eliminating the advantage.

(4) **Focused differentiation**, or a business model that specializes in providing a differentiated product to serve the needs of just one or two market segments or niches.

#### Step 4

#### Developing and Implementing the Chosen Strategies

Implementing strategy involves decisions about organizational design & how to use the

1. organizational structure,
2. corporate culture and
3. control environment to achieve the company's goals and execute its business model.

#### Step 5

#### Strategic controls and feedback





**Strategic controls and feedback** are used to monitor progress, isolate problems, and take corrective action. Over the long term, feedback is the basis for adjusting the original mission and objectives. The Balanced Scorecard is a widely-used strategic performance management tool designed to manage strategic performance.

### How can an organization translate its strategy into a set of performance measures?

It can do so by developing a *balanced scorecard* that provides the framework for a strategic measurement and management system. The balanced scorecard measures performance from four perspectives. One dimension is financial, the other three dimensions are non-financial:

- (1) financial,
- (2) customer,
- (3) internal business processes, and
- (4) learning and growth.

### Companies use the BSC as a management tool to:

- Clarify and communicate strategy
  - that translates an organization's mission and strategy into a set of four performance measures.<sup>(H)</sup>
  - transforms an organization's strategic plan from a passive document into the "marching orders" for the organization in its day-to-day activities.
  - The balanced scorecard enables execution of strategies. But a company's strategy influences the measures it uses to track performance in each of these perspectives.
    - A strategy is essentially a theory about how to achieve the organization's goals.<sup>(G)</sup>
- Align individual and unit goals to strategy
  - promotes **goal congruence** by encouraging everyone in the organization to work toward the same goals.
- Link strategy to the budgeting process
- Get feedback for continuous strategy improvement
  - It provides a framework that not only provides **performance measurements** but helps management to identify what needs to be done and how its achievement can be measured.
- Balanced scorecard-A process of compiling and organizing the key performance indicators (KPIs) of an organization into four segments: financial, customer, internal business process, and learning and growth. Each KPI can be measured in a specific way so that it can be managed appropriately.

### The BCG Matrix

The BCG (Boston Consulting Group) Growth Share Matrix looks at the company's products or services as one of the following: stars, cash cows, dogs, or question marks.

The BCG Growth-Share Matrix is a method of analyzing a *company's portfolio* of products to determine where each product is in its life cycle in order to make better decisions about allocation of resources in planning. Since a large firm may be viewed as a *portfolio* of investments in the form of strategic business units (SBUs), techniques of portfolio analysis have been developed to aid management in making decisions about resource allocation, new business startups and acquisitions, downsizing, and divestitures.



### **Stars (high RMS, high MGR)**

A star is in an industry that has a high market growth rate, and the product has a high share of the market.

Stars are products or services with

- *High Relative Market Share* (high cash generation) capabilities.
- *High Market Growth Rates* (high cash usage) and

Net cash flow (plus/minus) is modest.

- High Cash generation
- High Cash usage

### **Question marks (low RMS, high MGR)**

A **question mark** is a product in an industry with a high market growth rate, but the product has a low share of the market.

Question marks have

- *Low Relative Market Share* (low cash generation) capabilities and
- *High Market Growth Rates* (high cash usage) and

Low cash generation & High cash usage

- High Cash Usage
- Low Cash Generation

### **Cash cows (high RMS, low MGR)**

A cash cow is in an industry with a low market growth rate, but the product has a high share of the market.

- Cash cows are in mature markets in which the growth rate has slowed, but they are market leaders.
- The characteristics of a cash cow product do not change much, customers know what they are getting, and the price does not change much either.



Cash cows have

- *High Relative Market Share* (high cash generation) capabilities....but
- *Low Market Growth Rates* (low cash usage).

### Dogs (low RMS, low MGR)

- A dog is in a mature industry with a low market growth rate, and it has a low share of the market. A dog does not consume much cash, but it does not generate much cash, either.

Dogs have

- *Low Relative Market Share* (low cash generation) capabilities and
- *Low Market Growth Rates* (low cash usage).
  - The **cash cows** supply the cash to fund the future growth of the stars and the question marks.

### Balanced Scorecard

#### Definition

A framework for implementing strategy that translates an organization's mission and strategy into a set of performance measures. <sup>(11)</sup>

A process of compiling and organizing the key performance indicators (KPIs) of an organization into four segments: Financial, Customer, Internal Business Process, and Learning and growth.

KPIs are **measures** that drive the organization to achieve its goals. Each KPI can be measured in a specific way so that it can be managed appropriately.

#### Benefits of Implementing the BSC

- Moving organizations away from concentrating solely on financial data, thus broadens management's attention to **short-run and long-run performance**.
  - does not focus solely on achieving **short-run** financial objectives.
- It also highlights the nonfinancial objectives that an organization must achieve to meet and **sustain** its financial objectives.
- In for-profit companies, the primary goal of the balanced scorecard is to sustain long-run financial performance. Nonfinancial measures simply serve as **leading indicators** for the hard-to-measure long-run financial performance.
- encourages managers to focus on elements that tend to lead to **long-term success** instead of on short-term financial performance by rewarding them for improvements in those elements that tend to lead to long-term success.
  - Evaluating and rewarding managers based on these non-financial indicators should lead to long-term financial performance improvements, if the proper non-financial indicators have been selected.

#### Lagging vs. Leading indicators

##### Financial Measures

- Financial measures that focus on short-term financial performance are in fact **lagging** indicators of how the company is doing.

##### Non- Financial Measures

- Improvements in the non-financial measures provide the prospect of increased future economic value for shareholders. Nonfinancial measures focus on performance that should ultimately result in improved long-term financial performance. Thus nonfinancial measures are **leading** indicators of performance.

**The perspectives and their content have changed since the first article written by Kaplan and Norton. The current perspectives are as follows.**

<sup>1</sup> An **accounting report** that includes the firm's critical success factors in four areas: ...



## The Four Perspectives

### 1) The Financial perspective

- focuses on the organization's financial objectives and enables tracking of financial success and shareholder value.

By Evaluating

- the profitability of the strategy and
- the creation of shareholder value.

#### Common measures of financial performance are:

- Operating income, sales revenue growth, revenue from new products, gross margin percentage, cost reductions, Residual Income, and Return on Investment, New Produce Sales, Price/Earnings Ratio, Quick Ratio, return on equity, earnings per share and accuracy of sales projections, stock prices, operating earnings, earnings trend, revenue growth, gross margin percentage, cost reductions, cash flow coverage and trends, turnover (assets, receivables, and inventory), and interest coverage.

#### Links to Financial Measures

- Financial performance is a priority, but good long-term financial performance **will not be achieved** if goals in other **non-financial** categories are not attained.
- To drive future financial performance, the BSC requires assessment of other non-financial categories

### 2) The Customer perspective involves

- This perspective identifies **targeted customer** and **market segments** and measures the company's success in these segments.

#### Market Share

- measuring this success is the trend in the company's share of the market over time and the degree to which it increases in line with management goals.

#### Customer Satisfaction

- if customers are not satisfied they will take their business elsewhere.
- meeting customer needs better than the competition or being known for high quality and excellent customer service.
- The number of repeat customers and the percentage of deliveries that are made as promised and when promised can measure the degree to which customers' needs are being met.
- Customer surveys can be used to measure the level of customer service provided after the sale.

#### Pricing

- become the **lowest cost supplier**, in which case pricing goals will be part of the customer perspective.
  - Being the lowest cost supplier can be measured by the customer's total cost of using the company's product relative to the customer's total cost to use competitors' products.

#### Quality

- The number of defective products returned and the level of product reliability over time can measure achievement of quality goals.

#### Common measures of Customer satisfaction

- Focusing on the customer is critical to accomplishing goals as the customer drives all of a **company's revenue**.
- The primary customer outcome measures include market share, acquisition, satisfaction, retention, and profitability.



<u>CSF</u>	<u>Financial Measure</u>	<u>Nonfinancial Measure</u>
Customer Satisfaction	Trends in dollar amounts of returns	Market share
Dealer and Distributor Relationships	Trends in dollar amounts of discounts taken	Lead time
Marketing and Selling Performance	Trends in dollar amounts of sales	Market research results
Prompt Delivery	Trend in delivery expenses	On-time delivery rate
Quality	Dollar amount of defects	Rate of defects

1) **Other financial measures** may include dollar amount of sales, dollar amount of returns, and warranty expense.

2) **Other nonfinancial measures** may include unit sales, trends in unit sales, trend in market share, number of returns, rate of returns, customer retention rate, number of defects, number of warranty claims, rate of warranty claims, survey results, coverage and strength of distribution channels, training of marketing people, service response time, and service effectiveness,

### 3) The Internal Process perspective (IBP)

- includes innovations and improvements in products and services, operations, and customer service/support needed to create value for customers, which in turn furthers the Financial perspective.

How “Internal Business Process” (IBP) can help the company with below objectives?

#### If one of the company’s customer goals is to be the lowest cost supplier

- IBP should maintaining efficient, low-cost production,
  - which can be measured by metrics such as the cost of raw materials, the number of employee hours needed to manufacture a unit of product, and plant utilization. Efficient cycle times also keep costs low.

#### If high quality is a customer satisfaction goal

- the support for that objective will also be required within the **IBP** that create high quality, such as good manufacturing practices.

#### Meeting customers’ needs better than the competition

- is supported by innovations in products and services, which can be measured by the number of new product introductions.

#### Technological capability for customer service personnel

- is necessary to provide excellent customer service, and it is also needed in manufacturing in order to produce high quality products efficiently.

#### Internal business process measures

Go beyond simple financial variance measures to include output measures, such as quality, cycle time, yield, order fulfillment, production planning, throughput, and turnover.



<u>CSF</u>	<u>Financial Measure</u>	<u>Nonfinancial Measure</u>
Quality	Scrap costs	Rate of scrap and rework
Productivity	Change in company revenue/change in company costs	Units produced per machine hour
Flexibility of Response to Changing Conditions	Cost to re-purpose machine for new use	Time to repurpose machine for new use
Operating Readiness	Set-up costs	Downtime
Safety	Dollar amount of injury claims	Number of injury claims

1) **Other financial measures** may include such things as quality costs and level of inventory carrying costs.

2) **Other nonfinancial measures** may include new products marketed, technological capabilities, survey results, field service reports, vendor defect rate, cycle time, labor and machine efficiency, setup time, scheduling effectiveness, capacity usage, maintenance, and accidents and their results.

#### 4) The Learning and Growth perspective (originally called the innovation and learning perspective)<sup>2</sup>

The Learning and Growth perspective includes the capabilities that the organization must have in order to achieve its objectives in the **IBP** perspective.

##### Components of the Learning and Growth perspective (3 C's)

- **Human capital**, or the skills, talents, and knowledge of employees;
- **Information capital**, or the information systems, networks, and technology infrastructure of the company; and
- **Organizational capital**, or the company's culture, leadership, degree of teamwork, and knowledge management.

##### Innovation and learning measures

Focus on becoming efficient and effective at producing new products. The measures include time to market, percentage of sales from new products, and new products versus competitor's new products.

##### Learning and growth measures

Focus on education and training of personnel and can be measured by training sessions provided, developing leadership skills, and reducing the number of defects.

<u>CSF</u>	<u>Financial Measure</u>	<u>Nonfinancial Measure</u>
Development of Products	New R&D costs	Number of new patents applied for
Promptness of Their Introduction	Lost revenue (from slow introduction of new product to market)	Length of time to bring a product to market
Human Resource Development	Recruiting costs	Personnel turnover

<sup>2</sup> Originally focused on **employee learning**, but it now covers not only human capital but also **organizational capital and information capital**. Initially innovation was part of this perspective, but users of the balanced scorecard system discovered that innovation properly belonged in the Internal Process category.





Morale

Orientation/team-building costs

Personnel complaints

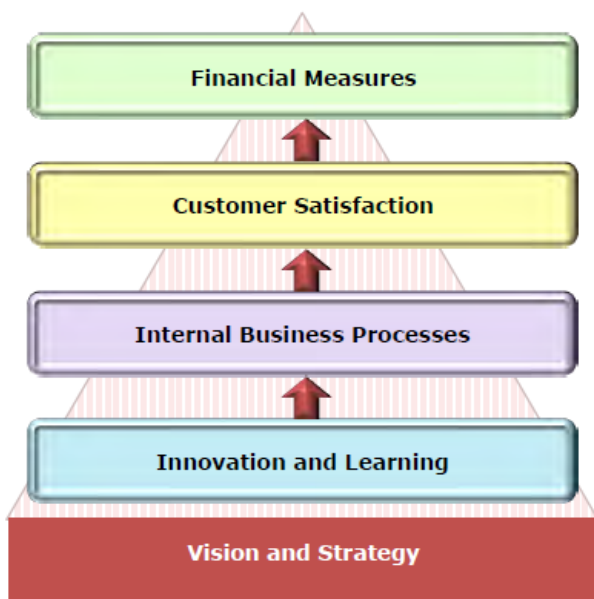
Competence of Work Force    Training/retraining costs

Hours of training

1) **Other financial measures** may include financial and operating results.

2) **Other nonfinancial measures** may include number of design changes and copyrights registered, R&D personnel qualifications, actual versus planned shipping dates, skill set levels attained, personnel survey results, organizational learning, and industry leadership.

### The Hierarchical Four broad categories of performance indicators/ perspectives.



In order for the balanced scorecard to be useful, the organization must be able to identify a cause-and-effect relationship between an action that could be taken (or avoided), that will have an effect on a CSF.

- For example: If the organization increases its R&D budget, then the organization can increase the number of new patents applied for.
- Achievement of the objectives in each perspective makes it possible to achieve the objectives in the next higher perspective.
- This chaining of objectives and perspectives embodies the implementation of a **strategy map**.

### Key Performance Indicators for a Balanced Scorecard<sup>3</sup>

- KPIs are measures of factors *critical to the success* of the organization.
- SWOT analysis helps a company determine its key performance indicators (KPIs).
- KPIs are specific, measurable goals that must be met in order to achieve a firm's strategy.
- Each KPI requires a defined business process, clear objectives for the process, quantitative or qualitative measurements for the objectives, and a plan for identifying and correcting variances from plan.
- KPIs should represent what is essential to the company competitive advantage and therefore its success.
  - To emphasize the importance of using strategic information, both financial and Non-financial, accounting reports of a firm's performance are now often based on **critical successes factors** in the above four different dimensions.
- Once the firm has identified its CSFs, it must establish specific, measurable ways for each CSF that are both relevant to the success of the firm and reliably stated.
- business should select a few critical metrics (KPIs)
  - KPIs should fit within an overall **cause-and-effect relationship** chain that ends with a relevant financial measure and the achievement of part of the company's strategy.

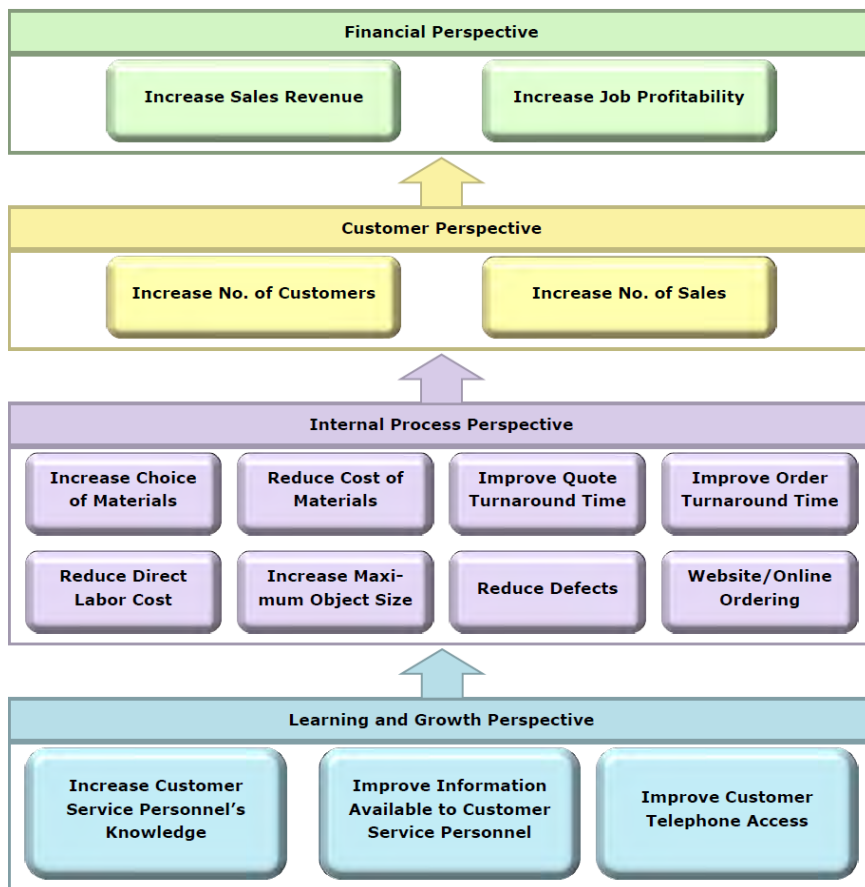
<sup>3</sup> CSFs are the cause of your success, whereas KPIs are the effects of your actions, some people use them interchangeably. The ICMA stop using the term CSFs and replace point "m" with a new one "l" ~~m. define critical success factors and discuss the importance of these factors in evaluating a firm~~ l. define key performance indicators (KPIs) and discuss the importance of these indicators in evaluating a firm.

**Functionality of the BSC/ implementation of a Strategy Map**

For the cause-and-effect chains of KPIs to be useful, they must be linked to a *definite outcome and a performance driver* that says how the outcome can be met

To achieve its objectives, the organization must establish the following:

- 1) Relevant criteria to measure **outcomes**. -This requires the use of **lagging** indicators which measure the results of actions.
  - a. Outcome measures are **lagging indicators**, or historic indicators of success such as measures of profitability, market share, employee skills, or customer retention.
- 2) Relevant performance **drivers** - This requires the use of **leading** indicators which are used to determine how an outcome can be met.

**Strategy Map**

A strategy map **links** these four balanced scorecard perspectives together, beginning with Learning and Growth.

The goals of the **Learning** and Growth perspective contribute to the **Internal Process** perspective because the company's culture of empowering staff members and providing them with the technological support they need makes innovation and improvements in products and services possible. The **innovations** and improvements in products and services support the goals of the **Customer** perspective, such as increasing market share. Increased market share leads to increased **profits**, thereby supporting the goals of the **Financial** perspective.

In a business where customer service is critical, important measurements to track include telephone wait time, the level of knowledge and empowerment of customer service personnel, and the availability to customer service personnel of needed information. For example, a company that provides 3D printing (additive manufacturing) services using 3D design files prepared and uploaded by the customer to its website needs service personnel knowledgeable enough to provide technical advice to customers in order to achieve satisfactory results; it needs adequate numbers of customer service representatives; and it must have sufficient telephone lines to keep customers' wait times to a minimum.



### Implementing a Balanced Scorecard

Implementing the balanced scorecard basically involves executing strategy. Without execution, even the best vision remains a dream. The balanced scorecard lends itself well to strategy execution, because the scorecard itself is a method of describing strategy in a way that can be acted on.

### The characteristics of Successful Implementation of BSC (Different Business Strategies call for Different Scorecards)

A BSC is most successful **when**

- the entire organization is aware of it and supports it.
- senior management support the program, even as high as the board of directors.
- It is tied to the organization's strategy and goals, and the performance measures can be quantified.
- It illustrating the sequence of cause-and-effect relationships
- Each business unit and division should be involved in developing its own customized scorecard.
  - When scorecards as developed by middle managers need to be reviewed and approved with input from senior management to make sure they are congruent with the company's goals.
- It is organized according to the four perspectives, with each selected scorecard measure on a line and classified within its perspective.
  - The target can be in one column followed by the actual results in the next column. Results that are in line and out of line can be identified, perhaps by color.
  - Each manager should be accountable for specific lines on each report, and a division head is accountable for all the lines on the divisional report.
- It identify tradeoffs that managers might make, for instance by reducing R&D spending to achieve short-run financial goals, or making other tradeoffs that could hurt future financial performance.
  - The decline of R&D spending or other problems would be signaled.
- It is marketed to both management and staff to garner support.
- Scorecard evaluation is more effective when it is used to judge the progress of an individual business unit relative to the prior year or relative to its goals rather than when used to compare a manager's performance with that of other managers or a segment's performance with that of other segments.
- a firm have extensive **enterprise resource planning**<sup>4</sup> systems to capture the required information.
- used to create an environment in which everyone can learn and grow.

### Problems With Balanced Scorecard Use for Performance Measurement

**The following are problems in implementation of the balanced scorecard approach:**

- 1) Using **too many measures**, with a consequent loss of focus on CSFs
- 2) Failing to evaluate **personnel** on nonfinancial as well as financial measures
- 3) Including measures that will **not** have long-term financial benefits
- 4) Not understanding that **subjective** measures (such as customer satisfaction) are imprecise
- 5) Trying to achieve improvements in **all areas** at all times
- 6) Not being aware that the hypothesized **connection** between nonfinancial measures and ultimate financial success may not continue to be true.

<sup>4</sup> Enterprise resource planning (ERP) is a usually a suite of integrated business software applications that a company can use to collect, store, manage and interpret data from multiple business activities.(2015 LOS)



Section  
B.2

# Budgeting Concepts



## Operations and Performance goals

### Strategy, the Long-Term Plan, and the Master Budget

**Planning** is the process of charting the future in an uncertain and dynamic world & mapping out the organization's future direction to attain desired goals, selecting a course of action and specifying how the action will be implemented.

**Planning** consists of:

- Selecting organization goals
- predicting results under various alternative ways of achieving those goals
- deciding how to attain the desired goals
- and communicating the goals and how to attain them to the entire organization.(H)

A **budget** provides the foundation for planning, because a successful budget is created by a process of aligning the company's resources with its strategy

### Importance of Strategy in Budgeting

A prerequisite for budget development is a strategic analysis that matches an entity's capabilities with available marketplace opportunities.

**Strategy** specifies how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its objectives. **Strategic analysis** is the basis for both long-term and short-term planning. **Budgeting** is a common accounting tool that companies use for implementing strategy, as budgeting facilitates movement toward strategic goals. A **budget** should start with a careful review and study of the organization's strategic plan. The objective is to build a budget to achieve the organization's strategic goals and objectives.

### Strategy, Planning, and Budgets

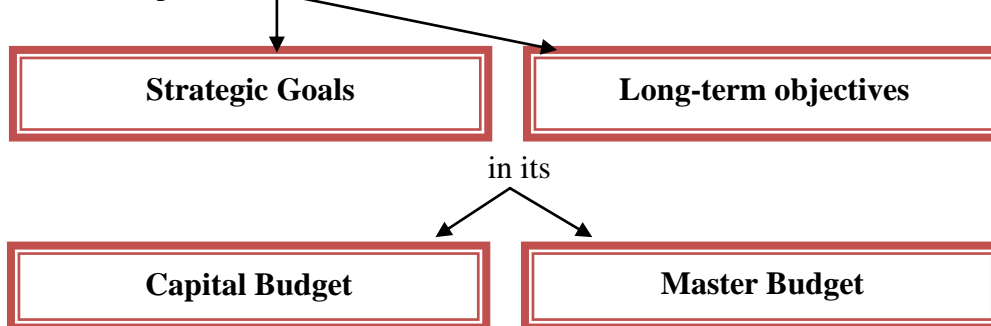
Strategic plans are expressed through long-run budgets and operating plans are expressed via short-run budgets, **budgets** can lead to changes in plans and strategies.

**Formulation of Strategy** starts with analyzing external factors and assessing internal capabilities. Having analyzed external factors surrounding the organization and having assessed the internal situations it possesses, management can then match opportunities with the strengths and competitive advantages of the organization and determine the organization's strategic goals and long-term objectives.

## **Resource Allocation**

The allocation of scarce resources among competing opportunities is accomplished through implementation of a strategy.

An organization expresses its



### **Long- term Planning**

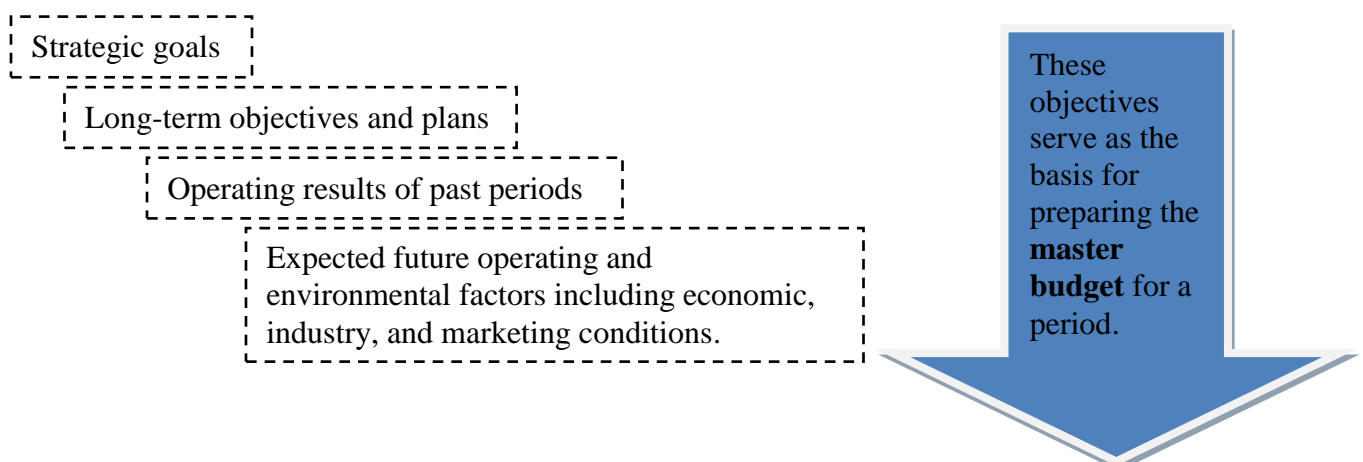
The organization's long-range plan identifies required actions over a 5- to 10 year period to attain the firm's strategic goal(s), **Planning for the long term** can involve discontinuing certain operations over time, arranging for equity or debt financing, and allocating resources gradually to new branches of business. Such major reorganizations can be accomplished only over a period of time and usually involve the use of capital budgeting part of the master budget), **Long-range planning** often entails **capital budgeting**, which is a process for evaluating, selecting, and financing major projects such as purchases of new equipment, construction of a new factory, and addition of new products.

The **strategic goals and objectives** of the organization are, ultimately, accomplished through a focused set of initiatives and projects that creates value for the organization.

### **Short-Term Objectives and the Master Budget**

**Short-term objectives** are goals for the coming period, which can be a **month**, a **quarter**, a **year**, or any length of time desired by the organization for planning purposes.<sup>(B)</sup>

An organization determines **short-term objectives for the budget period based on**



A **master budget** translates the organization's **short-term objectives** into action steps. A master budget reflects an organization's operating and financing plans for the upcoming budget period over a year.



## Fundamentals: Terminology, Budget Cycle, and Advantages of Budgeting

The following budget terms are used in this section.

**Budget:** A budget is (a) the quantitative expression of a proposed plan of action by management for a specified period and (b) an aid to coordinate what needs to be done to implement that plan. <sup>(H)</sup>

Budgeting Or targeting: is the process of preparing a budget

Budgetary Control to help ensure that a budget is achieved

Pro forma Statements

Strategic plan and Strategic budgeting: The strategic plan lays out the means by which a firm expects to fulfill its stated mission. Strategic budgeting is a form of long-range planning. strengths and weaknesses of the organization are evaluated



## Budgeting Cycle and Master Budget

Well-managed companies usually cycle through the following budgeting steps during the course of the fiscal year:

- 1-Plan the performance of the company, Create master budget and subbudgets.
- 2- Set a frame of reference and get manager buy-in, budget is used to test current performance against expectations..
- 3-Variations from the plan are examined, and corrective actions are taken when
- 4- Planning again, in light of feedback and changed conditions when possible.

The preceding four steps describe the ongoing budget process. The working document at the core of this process is called the **master budget**. The master budget expresses management's operating and financial plans for a specified period (usually a fiscal year), and it includes a set of budgeted financial statements. <sup>(H)</sup>



## Advantages of Budget

A budget forces **managers to look ahead**, to translate strategy into plans, to **coordinate** and **communicate** within the organization, and to provide a benchmark for **evaluating** performance. <sup>(H)</sup>

Budgeting often plays a major role in affecting **behavior** and decisions because managers strive to meet budget targets. <sup>(H)</sup>

Budgets play a crucial role in businesses. Without budgets, it's difficult for managers and their employees to know whether they're on target for their growth and spending goals. Budgeting is a common accounting tool that companies use for implementing strategy.

Why does a successful company feel the need to watch its spending so closely? In many profitable companies, a strict budget is actually a key to their success. Through budgeting, managers learn to anticipate and avoid potential problems. <sup>(H)</sup>

Budgets turn managers' perspectives forward and aid in **planning** and **controlling** the actions managers must undertake to satisfy their customers and succeed in the marketplace. Budgets provide measures of the financial results a company expects from its planned activities and help define objectives and timelines against which progress can be measured. <sup>(H)</sup>



Budgets are a big part of most management control systems. When administered wisely, a budget becomes a **p**lanning tool, a **c**ontrol tool, a **m**otivational tool, and a **c**ommunication tool.



As **p**lanning tool budget forces the organization to examine the future.



Budgets promote **c**oordination and **c**ommunication among organization units and activities



As a **c**ontrol tool budget provide a framework for measuring performance



Provide **m**otivation for managers and employees to achieve the company's plans



Promotes the efficient **a**llocation of organizational resources

#### **As planning tool budget forces the organization to examine the future.**

Planning allows for the input of ideas from multiple sources within the organization, and allows for input from **different viewpoints**. The planning process may generate **new ideas** for the organization's direction, or it may provide insight into **better ways to achieve goals** that have already been established. Without a budget, the organization would be operating in a reactive manner, rather than in a **proactive** manner, **minimize the adverse effects** that anticipated problems could have on operations, Budgets force managers to **think about and plan for the future**.

#### **Budgets promote coordination and communication among organization units and activities**

A budget also serves as a **communication** device through which **top management defines its plans** and goals for the period so that other **managers and employees have access to this information**. allows each division to know what it needs to do to satisfy the needs of other divisions.

Each part of the organization must **coordinate** its activities to attain the budgeted goals and objectives.

A budget promotes **goal congruence** and **coordination** among operating units, budgets requires departmental managers to make plans in conjunction with the plans of other interdependent departments,

#### **As a control tool budget provide a framework for measuring performance and provide a means for controlling operations (reporting variances between actual and budgeted spending)**

By **comparing** actual results to the budget for a given period, a manager's performance can be evaluated.

Question

Why budgeted performance is a better criterion than past performance for judging managers?

Answer

Because inefficiencies included in past results can be detected and eliminated in budgeting,Future conditions may be expected to differ from the past, and these can also be factored into budgets



**Monitoring: Provide a means to check on progress toward the organization's objectives.**

By comparing the actual results for a period to the budgeted results for that period, managers can see whether the organization is on track to achieving its goals.<sup>(IMA)</sup>

**Question** Why performance should not be compared against the current budget **only**?

**Answer** Because

- that can result in lower-level managers setting budgets that are **too easy** to achieve

**Question** How the budgetary process serve effectively as a control function?

**Answer** For the budgetary process to serve effectively as a control function, it must be integrated with the accounting system and the organizational structure.

**Question** How the budgetary control process improve future performance?

**Answer** Senior management ask questions about what happened and why, and how this knowledge can be used to ensure that such shortfalls do not occur again.

**Provide motivation for managers and employees to achieve the company's plans**

**Question** How the company use the budget process to improve motivation?

**Answer**

- Setting expected activities and operating results **clearly** in the budget, employees will know what is expected of them; Allow employees to **participate** in the budgeting process, thus helping employees embrace the budget as their own, Set **demanding but achievable goals** for managers. Performance evaluations allow an organization to motivate employees by **rewarding** them for **good performance**

**Question** How challenging should budget targets be??

**Answer** In practice, most companies set their budget targets at a “highly achievable” level as **highly achievable budgets may result in less undesirable behavior** at the end of budgetary periods by managers who are intent on earning their bonuses.

**Promotes the efficient allocation of organizational resources**

A budget helps management to allocate resources efficiently and to ensure that subunit goals are **congruent** with those of other subunits and of the organization.



## Characteristics of Successful Budgeting

Many factors characterize a successful budget, but no single factor can lead to a successful budget. The common factors in a successful budget include the following:

1. The budget must be aligned with the corporate **strategy**.
2. The budget must be perceived by employees as a **planning, communication, and coordinating** tool, and not as a pressure or blame device.
3. The budget must be characterized as a **motivating** tool to help employees work toward organizational goals.
4. A budget should be **coordinated**.
5. The budget should be used to alleviate potential bottlenecks and to **allocate resources** to those areas that will use the funds most efficiently and effectively.
6. The budget must be seen as an **internal control device**, and internal-use budgets should base evaluations on controllable or discretionary costs.

### Take a note:

Points from 1 to 6 discussed before so we will not give a detailed explanation again.

7. The budget must have the support of management at all levels.
8. Management (including top management) must fully endorse the budget-they must accept responsibility for reaching the budget goals.
9. The single most important factor in assuring its success is for **upper management** to demonstrate that they take the project seriously and consider it vital to the organization's future.
10. A higher authority than the team who developed the budget must review and approve the budget.
11. A budget can be successful only if those responsible for its implementation make it happen.
12. People who are charged with carrying out the budget need to feel ownership of the budget.
13. To be useful, the budget should be an accurate representation of what is expected to occur.

### Take a note:

Points from 7 to 13 will be discussed through the topic "Who Should Participate in the Budgeting Process?"

14. The time period for a budget should reflect the purpose of the budget (will discussed next pages).
15. Sales and administrative budgets need to be detailed in order that key assumptions can be better understood (will discussed next pages).
16. A budget should be flexible.  
The final budget should not be easily changed, but it must be flexible enough to be useful.

Budgets should compel planning, promote communication and coordination, and provide performance criteria. The budget process must balance input from those who will need to follow the budget against a thorough and fair review of the budget by upper management. (IMA)



## Characteristics of a Successful Budgeting Process

Whether the organization and its budget are very simple or highly complex, the characteristics of a successful budget process include: the budget period, the participants in the budget process, the basic steps in budgeting, and the use of cost standards (IMA).

### Budget Period

A budget usually is prepared for a set time, most commonly for the fiscal year with subperiod budgets for each of the constituent quarters or months.(B)

Budgets can also be prepared on a **continuous** basis.(HK)

In practice, Johnson & Johnson has only skeleton budgets for its **5- and 10-year budgets**.(B)

### Budget Participants & Budget Process

Three groups make or break a budget: the board of directors, top management, and the budget committee. Middle and lower management also play a significant role, because they create detailed budgets based on upper management's plan. (IMA)

**Methods of budget preparation** differ between companies, but all fall somewhere on a continuum between entirely authoritative and entirely participative.(IMA) , in other words budget development can be done using a participative process, an authoritative process, or a consultative process (combination approach) (HK). Note that the combination approach is sometimes considered to be a form of the participative approach (IMA).

### Basic steps in budgeting

The process usually includes the formation of a budget committee; determination of the budget period; specification of budget guidelines; preparation of the initial budget proposal; budget negotiation, review, and approval; and budget revision.(B)

For instance, the steps that responsibility centers take in preparing their budgets include: the initial budget proposal, budget negotiation, review and approval, and revision.(IMA)

### The use of Cost Standards

Organizations set different types of standards that they strive to achieve, Standards can be either **authoritative** or **participative**, Specific types of standard costs include **ideal** standards and **reasonably attainable** standards, Several sources are often used simultaneously when setting standards: activity analysis, historical data, market expectations, strategic decisions, and benchmarking, establishing a standard cost for direct materials & direct labor . (IMA)

## Budget Department or The budget director/controller

The budget department is responsible for **compiling the budget and managing the budget process**. The budget director and department are **not responsible for actually developing the estimates** on which the budget is based. This role is performed by those to whom the resulting budget will be applicable. The budget director has **staff**, not line, authority. (S)he has a technical and advisory role. The final decision-making responsibility rests with line management. (GL)



## Methods of budget preparation -Authoritative or Participative Budgeting?

The success of a budget program is largely determined by the way a budget is developed. (G)

Methods of budget preparation differ between companies, but all fall somewhere on a continuum between entirely authoritative and entirely participative.

### In an authoritative budget (top-down budget- imposed budget).

Top management sets everything from strategic goals down to the individual items of the budget for each department and expects lower managers and employees to adhere to the budget and meet the goals.

(IMA)

Authoritative budgeting provides better decision-making control than does participative budgeting.

Top management sets the overall goals for the budget period and prepares a budget for operating personnel to attain the goals.

An authoritative budget, however, often lacks the commitment ("buy-in") of lower-level managers and employees responsible for implementing it. (B)

### In a participative budget (bottom-up or self-imposed budget).

Managers at all levels and certain key employees cooperate to set budgets for their areas, and top management usually retains final approval. (IMA)

A participative budget is a good communication device.

The process of preparing a budget often gives top management a better grasp of the problems their employees face and provides the employees a better understanding of the dilemmas that top management deals with. A participative budget also is more likely to gain employee commitment to fulfill budgetary goals. Unless properly controlled, however, a participative budget can lead to easy budget targets or targets not in compliance with the organization's overall strategy.

The ideal process combines the features of each and falls somewhere between these methods, Note that the *combination approach* is sometimes considered to be a form of the participative approach. (IMA)

An effective budgeting process often combines both top-down and bottom-up budgeting approaches. Divisions prepare their initial budgets based on the budget guidelines issued by the firm's budget committee. Senior managers review and make suggestions to the proposed budget before sending it back to the divisions for revisions. The final budget usually is reached after several rounds of negotiations. For this reason, this is generally referred to as a *negotiated budgeting* process. (B)

A *consultative budget* is a *combination* of authoritative and participative budget development methods. Senior management asks for *input from lower-level managers* but then develops the budget with *no joint decision-making or negotiation* involved. (HK)

**Budgeting needs to be both bottom up and top down. Despite its advantages, a budget neither ensures improved cost control nor prevents inefficiencies.**



## Advantages and Disadvantages of Participative Budget Development

### Advantages include the following:

A participative budget is a good communication device. A budget is potentially a good motivational tool. A participative budget is more likely to be achievable. Advantages of a participative budget include greater accuracy of budget estimates. Participatory budgeting involves extensive coordination between departments.

### Disadvantages include the following:

Budget targets that are too easy to achieve. Participative budget can lead to targets not in compliance with the organization's strategy. Time-Consuming.

## Advantages and Disadvantages of Authoritative Budget Development

### Advantages include the following:

Better control. Facilitates the implementation of strategic plans. Reduces the time required for budgeting. Increases coordination of divisional objectives. Budgetary slack is not a problem.

### Disadvantages include the following:

Lacks commitment ("buy-in") of lower-Level managers, May result in a budget that is not possible to achieve, May limit the acceptance of proposed goals and objectives, Reduces the communication between employees and management.

As these comments suggest, **all levels in the organization should work together** to produce the budget. **Lower-level managers are more familiar with day-to-day operations** than top managers. **Top managers** should have a **more strategic perspective** than lower level managers. Each level of responsibility in an organization should contribute its unique knowledge and perspective in a cooperative effort to develop an integrated budget.<sup>(G)</sup>

An effective budgeting process therefore usually combines both top-down and bottom- up budgeting approaches. Divisions prepare their initial budgets based on the budget guidelines issued by the firm's budget committee. Senior managers review and make suggestions to the proposed budget before sending it back to the divisions for revisions. The final budget usually results from more participation, not enforced negotiations.

✚ **Thus, the right approach is a good balance of top management involvement with lower-level managers.**

✚ Greatest amount of positive motivation and goal congruence can be achieved if the firm have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.

✚ Senior management must still participate in the budget process to ensure that the combined objectives of the various departments are consistent with profitability objectives of the company and managers pursue objectives consistent with those set by top management.

## Behavioral Issues in Budgeting

The human aspects of budgeting are extremely important

### Budgetary Slack or Padding the budget

Budgetary slack describes the practice of **underestimating budgeted revenues**, or **overestimating budgeted costs**, to make budgeted targets more **easily achievable**.





### Why managers build slack into the budget ?

Line managers are also **unlikely to be fully honest** in their budget communications if top management mechanically institutes **across-the-board cost reductions** (say, a 10% reduction in all areas) in the face of projected revenue reductions. Budgetary slack provides managers with a **hedge against unexpected adverse circumstances**.<sup>(H)</sup>

Managers often justify such practices as **insurance against uncertain future** events.

### Adverse effects of Budgetary Slack

- Budgetary slack **misleads top management**, which **leads to inefficient resource planning and allocation and poor coordination**.<sup>(H)</sup>
- **wastes resources** and could lead employees to **make half-hearted efforts**.<sup>(B)</sup>
- result in a **very inaccurate master budget**.<sup>(IMA)</sup>
- **misrepresent the true profit** potential of the company.

### How companies avoid problems of budgetary slack?

- Some companies use budgets primarily for planning purposes. They **evaluate managerial performance using multiple indicators** that take into account various factors such as the prevailing business environment and performance relative to competitors, use different approaches to obtain accurate information.
- Another approach to reducing budgetary slack is for managers to **involve themselves regularly in understanding what their subordinates are doing**.
- Some companies, such as IBM and Kodak, have designed **innovative performance evaluation measures** that reward managers based on the **subsequent accuracy of the forecasts used in preparing budgets**.
- **use the budget/profit plan as a planning and control tool but not for managerial performance evaluation**.
- **holding in-depth reviews** during budget development, and allowing for **flexibility** in making additional budget changes.

### The Budgeting Process

The **traditional budgeting process** can range from the informal simple processes small firms use that take only days or weeks to complete to elaborate, lengthy procedures large firms or governments employ that span months from start to final approval. The process usually includes the formation of a budget committee; determination of the budget period; specification of budget guidelines; preparation of the initial budget proposal; budget negotiation, review, and approval; and budget revision.

### Best Practice Guidelines for the Budget Process

Best practices in budgeting include the following, some of which have already been discussed:

- **The development of the profit plan should be linked to corporate strategy.**
- **Use the budgeting process to minimize the adverse effects that anticipated problems might have on operations.**
- The profit plan must have the support of management at all levels.
- Communication is vital.
- The profit plan should be coordinated
- The profit plan should be a motivating device.
- Design procedures to allocate funding resources strategically.
- Managers should be evaluated on performance measures other than simply meeting budget targets.



- Link cost management efforts to budgeting.
- The strategic use of variance analysis.
- Reduce budget complexity and budget cycle time.
- The time period for a budget should reflect the purpose of the budget.
- Develop budgets that can be revised if necessary. A budget should be flexible.
- Budgeting should not be rigid.

### Budgeting and Responsibility Accounting

Each manager, regardless of level, is in charge of a responsibility center. A **responsibility center** is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities. Four types of responsibility centers are cost centers, revenue centers, profit centers, and investment centers. <sup>(H)</sup> **The higher the manager's level, the broader the responsibility center and the larger the number of his or her subordinates.** <sup>(H)</sup> **Responsibility accounting** is a system that measures the plans, budgets, actions, and actual results of each responsibility center. <sup>(H)</sup>

### Responsibility and Controllability

**Controllability** is the degree of **influence** that a specific manager has over costs, revenues, or related items for which he or she is responsible. <sup>(H)</sup>

A **controllable cost** is any cost that is primarily **subject to the influence** of a given responsibility center manager **for a given period.** <sup>(H)</sup>

A responsibility accounting system could either **exclude all uncontrollable costs** from a manager's performance report or **segregate such costs from the controllable costs.** <sup>(H)</sup>

### Cost classification according to performance evaluation VS. the cost classification according to behavior

It is also important to recognize that fixed costs and indirect costs are not always uncontrollable, and variable costs and direct costs are not always controllable. The nature of each cost will vary according to its characteristics and each cost should be analyzed to determine who controls it.

#### Question

Why in practice, controllability is difficult to pinpoint?

#### Answer

For at least two reasons:

- **Few costs are clearly under the sole influence of one manager.**
- **With a long enough time span, all costs will come under somebody's control.**

### Take a Note:

- Executives differ in how they embrace the controllability notion when evaluating those reporting to them.
  - Some CEOs regard the budget as a firm commitment that **subordinates must meet.** Failure to meet the budget is viewed unfavorably.
  - Other CEOs believe a **more risk-sharing approach** with managers is preferable

This distinction between controllable and non-controllable costs is especially important if managers' performance evaluations will be dependent upon meeting budgetary targets. (Although we have said this is **not a good idea**, it may be done in some organizations.) If other performance measures are used to evaluate managers, this distinction may be less important.



Question

Why managers should **avoid** overemphasizing controllability?

Answer

Responsibility accounting is more far-reaching. It focuses on **gaining information and knowledge, not only on control.**

*Responsibility accounting helps managers to first focus on whom they should ask to **obtain information** and **not** on whom they should **blame**.*<sup>(H)</sup>

Responsibility accounting involves holding managers responsible for only those things under his/her discretion and control, such as net revenue and controllable division costs.

Question

How do companies use responsibility centers? Should performance reports of responsibility center managers include only costs the manager can control?

Answer

A responsibility center is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities.

Responsibility accounting systems are useful because they measure the plans, budgets, actions, and actual results of each responsibility center. **Controllable costs** are costs primarily subject to the influence of a given responsibility center manager for a given time period. **Performance reports** of responsibility center managers **often include** costs, revenues, and investments that the managers **cannot control**. Responsibility accounting associates financial items with managers on the basis of which manager has the **most knowledge** and **information** about the specific items, **regardless** of the manager's ability to exercise **full control**.

### Cost Standards in Budgeting

A **standard cost** is a **carefully** determined cost a firm or organization sets for an operation, the cost the firm or organization **should** incur for the operation. A standard cost usually is expressed on a **per-unit basis**. Standard costs are incorporated into budgets and as such can be used to monitor and control operations, and to evaluate performance.<sup>(B)</sup> A standard is a **carefully** determined *price, cost, or quantity* that is used as a benchmark for judging performance.<sup>(H)</sup> **Standard costs** are **predetermined expectations** about how much a **unit of input**, a **unit of output**, or a given activity should cost. The use of standard costs in budgeting allows the **standard-cost system** to alert management when the actual costs of production differ significantly from the standard.<sup>(GL)</sup>

Question

How are the words “budget” and “standard” related?

Answer

Budget is the broader term. To clarify, **budgeted** input prices, input quantities, and costs **need not be based on standards**.<sup>(H)</sup>

As we saw previously, they could be based on past data or competitive benchmarks, for example. However, when standards are used to obtain budgeted input quantities and prices, the terms “standard” and “budget” are used interchangeably.<sup>(H)</sup>

### Four reasons for using standard costs are:

(i) cost management, ex: standard costs can be used in costing inventory accounts,(ii) pricing decisions,(iii) budgetary planning and control, and(iv) financial statement preparation.



### Advantages of standard cost system

- Assists in performance evaluation.
- Allows employees to better understand what is expected of them.
- Permits development of **flexible budgeting**.

### Ideal/theoretical or perfection or maximum efficient/tight Standards

- Reflects maximum efficiency in every aspect of an operation.
- **Difficult, but not impossible, to achieve.**
- Assume **peak operating efficiency** and the **absence of any production disruptions**.
- ideal standards assume **perfection across all operations**.
- can lead to undue stress on employees that, in turn, may lead to **decreases in morale and ultimately decreases in productivity**.<sup>(B)</sup>
- **attained only under the best circumstances**.<sup>(G)</sup>
- Allow for **no machine breakdowns** or other work interruptions,
- and they call for a level of effort that can be attained only by the **most skilled and efficient employees working at peak effort** 100% of the time.<sup>(G)</sup>
- work into a continuous improvement strategy and total quality management philosophies.<sup>(IMA)</sup>

**Some** managers feel that such standards **spur continual improvement**. These managers argue that even though employees know they will rarely meet the standard, it is a constant reminder of the need for ever-increasing efficiency and effort.<sup>(G)</sup> they can have positive behavioral implications if workers are motivated to strive for excellence.

However, they are not in wide use because they can have negative behavioral effects if the standards are impossible to attain. Few organizations use ideal standards. Most managers feel that ideal standards tend to **discourage** even the most diligent workers.

### Currently attainable (practical) standards costs/ "tight but attainable."

- sets the performance criterion at a level that a person with **proper training** and **experience** can attain most of the time without having to exert extraordinary effort.
- emphasizes normality and allows for some imperfections and inefficiencies.<sup>(B)</sup>
- allow for normal machine downtime and employee rest periods.<sup>(G)</sup>
- can be attained through reasonable, though highly efficient, efforts by the average worker.<sup>(G)</sup>
- achieved by reasonably **well-trained workers** with an allowance for **normal spoilage**, waste, and downtime.<sup>(GL)</sup>
- Serve as a better motivating target for manufacturing personnel.
- A currently attainable standard discourages continuous improvement because the workers are not motivated to perform better than they currently are performing continuous improvement is a key element in TQM.
- An alternative interpretation is that practical standards represent possible but difficult-to-attain results.<sup>(GL)</sup>

**Most companies use practical expected standard costs in their standard cost system and in their flexible budgets.** If they choose not to do this, then management will have an additional variance to report; the variance between the practical expected costs and the Ideal theoretical costs.

**If standards are too tight, repeated failure to achieve them will reduce motivation. When standards are too loose, they represent an invitation to relax and provide little incentive to improve performance.**



## Standard-Setting Procedures

A firm can use either an authoritative or a participative procedure in setting standards. An **authoritative standard** is determined solely or primarily by management. In contrast, a **participative standard** calls, throughout the standard-setting process, for active participation of employees affected by the standard.

### Advantages (HK/B)

- ensure proper consideration of all operating factors,
- expedite the standard-setting process, than when more individuals are involved.
- management's expectations will be reflected in the resulting standard costs;
- ensuring total consistency across all functional areas.
- It is also far less complex and time-consuming than coordinating input from the middle and lower levels.

### Disadvantage

- affected employees will not see them as their own and will be less likely to accept them, which in turn will reduce their motivation to achieve the standards.(HK)

Firms using an authoritative process in standard setting, however, should keep in mind that a standard is useless if ignored by employees.

## A participative (grass-roots) standard-setting

Involves all the employees who will be affected by the standard. When employees participate in setting the standards, they are more likely to accept them and not see them as unreasonable.

### Advantages

- Participation encourages employees to have a **sense of ownership** of the output of the process.
- The result is an **acceptance** of, and **commitment** to, the goals expressed in the budget.
- It provides a broader information base.
- Middle- and lower-level managers are often far **more informed** about operational realities than senior managers.
- Reduces the chance that employees will view the standard as **unreasonable** and increases the likelihood that they will buy into or adopt it as their own.

### Disadvantage

- resulting standards may not support achievement of the firm's strategic goals or operating objectives.(HK)
- costly in terms of time and money.
- the quality of participation is affected by the goals, values, beliefs, and expectations of those involved, but if a budget is to be used as a performance evaluator, a manager asked for an estimate may provide one that is **easily** attained.(GL)

## Sources for Standards Setting

Standard costs are derived from general standards for operations. Several resources are used in determining standards for operations. These are;

- Activity analysis,
- Historical data, and
- Benchmarking

# Section B. Planning, Budgeting and Forecasting

## (30% - Levels A, B, and C)

### Content Specification Outlines

#### Section B. Planning, Budgeting and Forecasting

- Section B.1. Strategic planning
- Section B.2. Budgeting concepts

Above CSOs cover below units in Gleim:

#### STUDY UNIT EIGHT: ANALYSIS AND FORECASTING TECHNIQUES

- 8.1 Correlation and Regression
- 8.2 Learning Curve Analysis
- 8.3 Time Series Analysis
- 8.4 Expected Value
- 8.5 Sensitivity Analysis
- 8.6 Strategic Management
- 8.7 The Balanced Scorecard
- 8.8 Strategic Planning

#### STUDY UNIT NINE BUDGETING - CONCEPTS, METHODOLOGIES, AND PREPARATION

- 9.1 Roles of Budgets and the Budgeting Process
- 9.2 Budgeting, and Standard Costs
- 9.3 The Master Budget
- 9.4 Budget Methodologies
- 9.5 Operating Budget Calculations -- Production and Direct Materials
- 9.6 Operating Budget Calculations -- Others
- 9.7 Projecting Cash Collections
- 9.8 The Cash Budget
- 9.9 Sales Forecasts and Pro Forma Financial Statements

*Last updated 2-Aug-2015*





## Strategic Planning

### Strategy, the Long-Term Plan, and the Master Budget

Planning in general refers to the process that provides guidance and direction regarding what an organization needs to do throughout its operations. It determines the answers to the “who, what, when, where and how” questions of a business operation.

Planning is the first activity that management must undertake when **creating** yearly budgets and making other critical decisions that will affect the future.

A company’s **plan** serves as its guide or compass for the activities and decisions made by individuals throughout the entire organization.

**Planning** is the process of charting the future in an uncertain and dynamic world & mapping out the organization's future direction to attain desired goals, selecting a course of action and specifying how the action will be implemented.

**Planning** consists of:

- Selecting organization goals
- predicting results under various alternative ways of achieving those goals
- deciding how to attain the desired goals
- and communicating the goals and how to attain them to the entire organization.(H)

**Good planning** helps managers attain goals, recognize opportunities, providing a basis for controlling operations, forcing managers to consider expected future trends and conditions, checking progress toward the objectives of the organization and minimize the negative effects of unavoidable events.

A **budget** provides the foundation for planning, because a successful budget is created by a process of aligning the company's resources with its strategy. While a plan or budget **may not** guarantee success, the lack of plan can remove opportunities, cause the company to be constantly putting out fires, or cause a complete business failure. When a budget exists without consideration of strategy, it usually begins with the prior year's budget and misses opportunities to change the direction of the company.

### Underlying Assumptions

- A publicly-owned for-profit company must have **maximizing shareholder value** as its ultimate goal. The shareholders are the owners. They have provided risk capital with the expectation that the managers will pursue **strategies** that will give them a good return on their investment.
- Shareholders want to see **profitable growth**: high profitability and also sustainable profit growth.
  - **Shareholder value** is the returns that shareholders earn as a result of having purchased shares in a company. Shareholders’ returns come from both:
    - capital appreciation of their shares’ value and
    - from dividends received.
  - **Shareholder value** is the returns that shareholders earn as a result of having purchased shares in a company. (HK)
  - Profitability and profit growth are the primary means by which **shareholder value increases**.



- Common shareholders, elect the board of directors.
  - Thus, the members of the board of directors represent the owners of the company. The board of directors of a company is responsible for:
  - ensuring that the company is operated in the best interest of the shareholders, who are the owners of the company.
  - sets company-wide policy and advises the CEO and other senior executives, who manage the company's day-to-day activities.
  - Boards review and approve strategy, significant investments, and acquisitions.
  - oversees operating plans, capital budgets, and the company's financial reports to common shareholders.
  - overseeing the internal control system.
  - provide governance (i.e., system by which a company is directed and controlled), guidance and oversight to the management of the company.
  - The board of directors is the critical link between shareholders and managers.
  - Managers carry out three major activities— planning, directing and motivating, and controlling. (next title discuss the roles of managers).
- For most companies, if not all, the ultimate objective is to achieve **superior performance** in comparison with the performance of their competitors.
- Attaining and maintaining both short-term profitability and long-term profit growth is one of the greatest challenges facing managers.



### **The Four Functions of Management**

Management accounting information plays a vital role in the basic management activities—but most particularly in the planning and control functions.

Management accountants

- contribute to *strategic* decisions by providing information about the sources of competitive advantage (H).
- develops cost management information for the CFO, other managers, and employee teams to use to manage the firm and make the firm more competitive and successful.

Cost management information is provided for each of the four major management functions:

1. **Strategic Management.** Cost management information is needed to make sound strategic decisions regarding choice of products, manufacturing methods, marketing techniques and channels, assessing customer profitability and other long-term issues.
2. **Planning and Decision Making.** Cost management information is needed to support recurring decisions regarding replacing equipment, managing cash flow, budgeting raw materials purchases, scheduling production, and pricing.
3. **Management and Operational Control.** Cost management information is needed to provide a fair and effective basis for identifying inefficient operations and to reward and motivate the most effective managers.
4. **Preparation of Financial Statements.** Cost management information is needed to provide accurate accounting for inventory and other assets, in compliance with reporting requirements, for the preparation of financial reports and for use in the three other management functions.



### **Strategic Management:**

The most important function is strategic management, which is the development and implementation of a sustainable competitive position in which the firm's competitive advantage provides continued success.

**A strategy** is a set of goals and specific action plans that, if achieved, provide the desired competitive advantage. Strategic management involves identifying and implementing these goals and action plans.

*Covered in Section B. Part one.*

### **Planning & decision making**

Next, management is responsible for planning and decision making, which involve budgeting and profit planning, cash flow management, and other decisions related to the firm's operations, such as deciding when to lease or buy a facility, when to repair or replace a piece of equipment, when to change a marketing plan, and when to begin development of a new product.

*Covered in Section B. Part one. & Section C Part two.*

**Management accounting information plays a vital role in these basic management activities—but most particularly in the planning and control functions.**

### **Control**

The third area of responsibility, control, consists of two functions, operational control and management control.

**Operational control** takes place when mid-level managers (e.g., site managers, product managers, regional managers) monitor the activities of operating-level managers and employees (e.g., production supervisors and various department heads).

In contrast, **management control** is the evaluation of mid-level managers by upper-level managers (the controller or the CFO).

*Covered in Section C. Part one.*

In the fourth function, **preparation of financial statements**, management complies with the reporting requirements of relevant groups (such as the Financial Accounting Standards Board) and relevant federal government authorities (for example, the Internal Revenue Service and the Securities and Exchange Commission). The financial statement preparation role has recently received a renewed focus as countries throughout the world have adopted International Financial Reporting Standards (IFRS), and the United States is expected to adopt these standards by 2014. The financial statement information also serves the other three management functions, because this information is often an important part of planning and decision making, control, and strategic management

*Covered in Section A. Part one.*



## The Work of Management and the Need for Managerial Accounting Information

Every organization—large and small—has managers. Someone must be responsible for formulating strategy, making plans, organizing resources, directing personnel, and controlling operations. <sup>(G)</sup> planning, Managers everywhere, carry out three major activities, planning, directing and motivating, and controlling.

**Planning** involves establishing a basic strategy, selecting a course of action, and specifying how the action will be implemented. <sup>(G)</sup>

The most important planning tool when implementing strategy is a **budget**. A budget is the quantitative expression of a proposed plan of action by management and is an aid to coordinating what needs to be done to execute that plan. <sup>(H)</sup>

**Directing and motivating** involves mobilizing people to carry out plans and run routine operations. <sup>(G)</sup>

**Controlling** involves ensuring that the plan is actually carried out and is appropriately modified as circumstances change. <sup>(G)</sup>

**Control** comprises taking actions that **implement** the planning decisions, deciding how to **evaluate performance**, and providing **feedback** and **learning** to help future decision making. <sup>(H)</sup>

**Measuring actual performance** informs managers how well they and their subunits are doing. <sup>(H)</sup>

A **budget** serves as much as a **control** tool as a planning tool. Why? Because a budget is a benchmark against which actual performance can be compared. <sup>(H)</sup>

The performance report spurs investigation and learning. Learning can lead to changes in goals, changes in strategies, changes in the ways decision alternatives are identified, changes in the range of information collected when making predictions, and sometimes changes in managers.

Management accountants serve as business partners in these planning activities because of their understanding of what creates value and the key success factors. <sup>(H)</sup> Companies' management accountants will collect, analyze, and summarize these data in the form of budgets. <sup>(G)</sup>

The performance report in would prompt the management accountant to raise several questions directing the attention of managers to problems and opportunities. <sup>(H)</sup> As we shall see in later chapters, one of the central purposes of managerial accounting is to provide this kind of **feedback** to managers. <sup>(G)</sup>



## Basic Concepts/Definitions

### Strategic Management (The most important function)

- Is the development and implementation of a sustainable *competitive position* in which the firm's *competitive advantage* provides continued success.<sup>(BL)</sup>
- Sets *overall objectives* for an entity and guides the process of reaching those objectives.
- It is the responsibility of upper management.<sup>(GL)</sup>

### Strategic planning (sometimes referred to as long-range planning or Strategic analysis)

The purpose of strategic planning is to

- guide the company in its efforts to achieve superior performance, competitive advantage, and maximized shareholder value.
- setting overall organizational objectives and goals and drafting strategic plans. It is a long term process aimed at charting the future course of the organization. <sup>(GL/CMA)</sup>
- is the design and implementation of the *specific steps* and processes necessary to reach the overall objectives.<sup>(GL)</sup>
- Strategic planning involves
  - a comprehensive look at an organization in relation to its industry, competitors, and environment.<sup>(IMA)</sup>
    - A systematic approach to analyzing threats and opportunities and examining why some organizational strategies have better competitive and profit prospects than others
  - drafting of strategic plans.
  - A sound framework for developing an effective operating budget.
  - An organizational learning opportunity for managers to think about strategies and how to best implement them
  - An exercise to **align** management decision making and actions with corporate strategies (e.g., to gain the buy-in of managers and show how their decisions and actions support corporate programs)
  - A basis for both financial and nonfinancial performance measures
  - A channel of communication among all levels of management about strategies, objectives, operational plans, and so on.
  - Guidance for approaching new situations
- It is the responsibility of upper management.<sup>(GL)</sup>
  - Although traditionally the responsibility of top management, all organizational members should be involved in the process. Well thought out strategic planning can help an organization adeptly navigate through turbulent times-both good and bad.<sup>(IMA)</sup>
  - An organizational learning opportunity for managers to think about strategies and how to best implement them

### Limitations of Strategic Planning

- The effort, time, and expense involved in the process
- The fact that planning based on predictions is not an exact science; due to a variety of factors, plans may prove to be incorrect and fail
- The potential for resistance to change resulting from entrenched ways of doing things
- The risk that planning can become a bureaucratic exercise devoid of fresh ideas and strategic thinking



Strategic planning is **based on**:

- identifying and specifying ultimate organizational goals and objectives (usually addressed first),
- evaluating the strengths and weaknesses of the organization, and
- assessing risk levels,
- forecasting the future direction and influences of factors relevant to the organization such as:
  - market trends,
  - changes in technology,
  - international competition, and
  - social change.
- deriving the best strategy for reaching the objectives given the organization's strengths and weaknesses and the relevant future trends.
- The time frame for strategic planning is normally five to ten years. It may, however, be longer.

Setting ultimate objectives for the firm is a necessary prelude to **developing strategies** for achieving those objectives. **Plans** and budgets are then needed to implement those strategies.

Strategic management and strategic planning are thus *closely linked*. By their nature, strategic management and strategic planning have a long-term planning horizon.<sup>(GL)</sup>

The final step is to derive the best **strategy** for reaching the objectives.

## **Strategy**

**Strategy** is the **organization's plan** to

- match its **strengths/capabilities** with the opportunities in the marketplace to accomplish its desired goals over the short and long term.
- addresses the objectives of the organization;
- locates potential markets;
- considers the impact of events, competitors, and the economy;
- addresses the structure of the organization; and
- evaluates the risks of alternative strategies. <sup>(IMA)</sup>
- set of actions taken by managers of a company to increase the company's performance.

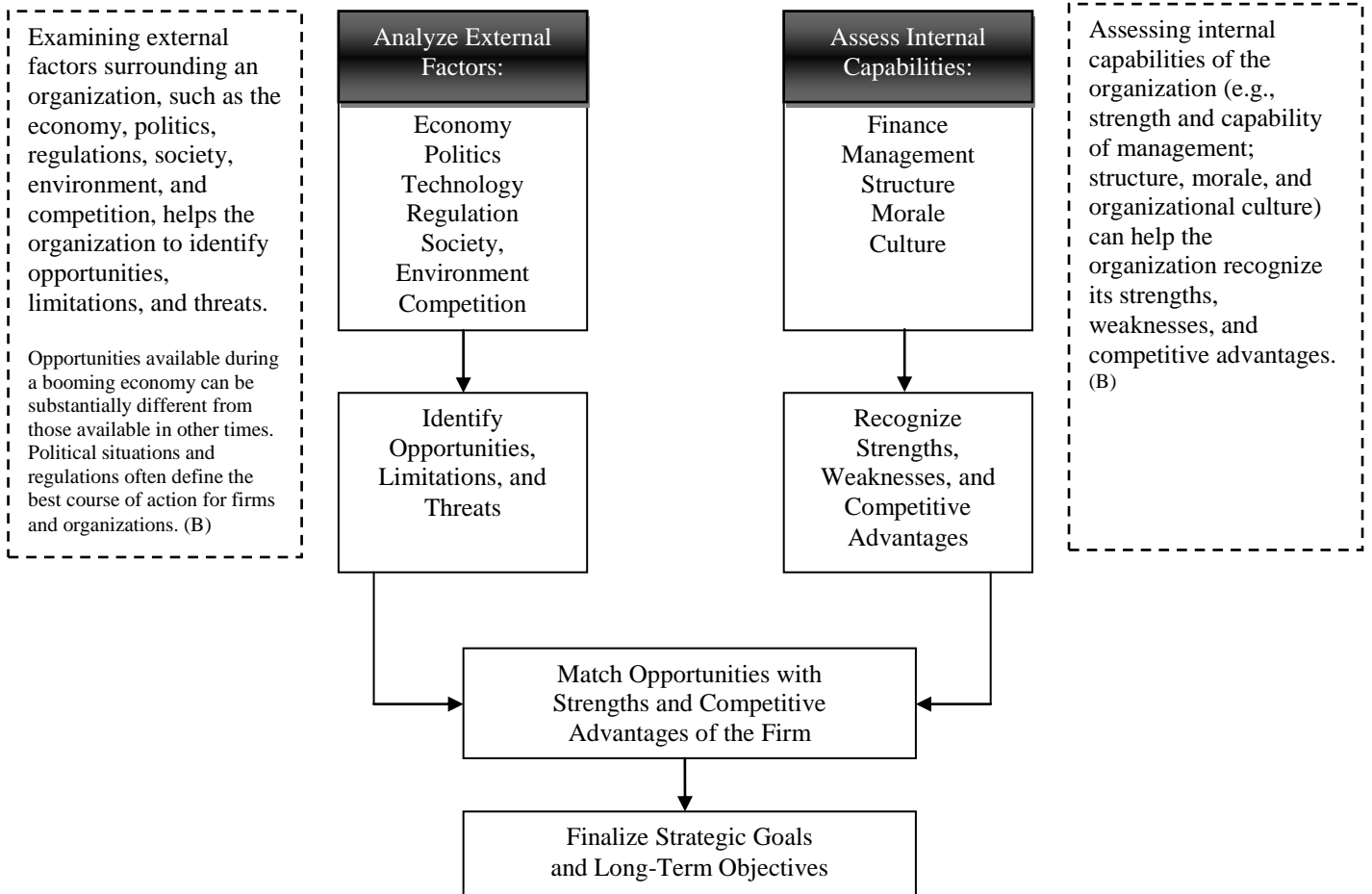




## Strategic Planning Framework

(The success stories of many organizations are stories of good strategy formulation and execution)

Formulation of strategy starts with  
analyzing external factors and assessing internal capabilities



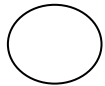
Having analyzed external factors surrounding the organization and having assessed the internal situations it possesses, management can then match opportunities with the strengths and competitive advantages of the organization and determine the organization's **strategic goals** and **long-term objectives**. (B)

**(LOS) Discuss how strategic planning determines the path an organization chooses for attaining its long-term goals and mission**

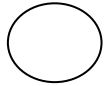
An organization's strategic plan is a long-term plan that flows directly from the organization's vision and mission. The strategic plan is used to develop long-term goals for the organization. The organization sets long-term objectives as milestones to be achieved on the way to attaining the objectives.



## Steps in the Strategic Planning/Management Process (five-stage process):



**Step 1** Defining/selecting the company's mission and addressing the key corporate goals.

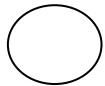


**Step 2** Analyzing the organization's external factors & the internal operating environment .

Analyzing the organization's external competitive environment in order to identify opportunities and threats;

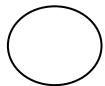
Analyzing the internal operating environment to identify strengths, weaknesses and limitations of the organization;

The organization performs a situational analysis, also called a SWOT analysis



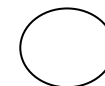
**Step 3** Formulating and selecting strategies (SWOT analysis) that, Based on the results of the situational analysis, upper management develops a group of strategies describing how the mission will be achieved.

Formulating and selecting strategies that, consistent with the organization's mission and goals, will optimize the organization's strengths and correct its weaknesses and limitations for the purpose of taking advantage of external opportunities while countering external threats (SWOT analysis);



**Step 4** Developing and implementing the chosen strategies.

Strategic plans are implemented through the execution of component plans at each level of the entity.



**Step 5** Strategic controls and feedback are used to monitor progress, isolate problems, and take corrective action. Over the long term, feedback is the basis for adjusting the original mission and objectives.

M-A-S-I-C



**Step 1**

**Defining the company's mission and addressing the key corporate goals.**

**The Mission Statement**

- Provides the guiding compass for an organization.
- Provides the context within which its strategies will be formulated.
- Summarizes the entity's reason for existing.
- It provides the framework for formulation of the company's strategies.
- succinctly articulates an organization's business position.
- expresses how the organization will continuously move toward its vision and provides a clear view of what the firm is trying to accomplish for its customers.

**Characteristics of Effective Missions**

- When they consist of a single sentence.
  - mission of Starbucks Coffee Company is “to inspire and nurture the human spirit - one person, one cup and one neighborhood at a time.
- Stated in general terms (very broad).
  - Setting specific objectives in the mission statement can limit an entity's ability to respond to a changing marketplace (i.e., because customer demands can shift quickly, and a given need can be served in more than one way).
- A mission statement answers this question: Why are we in business? In answering this question, a mission statement must be:
  - accurate,
  - easily understood,
  - motivating, and
  - transferable into action.
- It needs to be **flexible** and ready to adapt to changing conditions and new ways of serving its customers' needs.

**The mission statement includes four components:**

- ☐ 1) A statement of the company's “reason to be.”
- ☐ 2) Its vision, or a statement of a desired future stat.
- ☐ 3) A statement of the organization's values.
- ☐ 4) A statement of its major goals.

**Statement of the Company's “Reason To Be”**

In writing the mission statement, management should ask itself, “What is our business? What will it be? What should it be?” In answering the questions, they should think in terms of the **customer**:

- What customer groups are being served?
- What customer needs are being served?
- And by what means (skills, knowledge or distinctive competencies) are customers' needs being served?

The answers should be **customer-centered** rather than product-centered. In other words, the company should be in business not to sell widgets, but to satisfy its customers' needs for the benefits that the company can supply through its widgets.



### Examples

- For instance, **HOCK** is not in business to sell study materials for the CMA exams. Rather, HOCK is in business to help professionals advance in their careers and in their earning capacity by getting certified.
- This company is applying
  - a particular skill (the ability to teach)
  - in order to satisfy a particular need (the need to get certified in order to advance professionally)
  - for a particular group of people (financial professionals).
- **Merck & Co.**, a pharmaceutical company,
  - “Our business is preserving and improving human life.”
- **Hilton Worldwide**
  - To be the preeminent global hospitality company- the first choice of guests, team members, and owners alike.

➤ The next part of the mission statement is the company’s **vision**.

### Statement of the Company’s Vision

- It is what the company would like to achieve
- Is a guiding image of future success and achievement articulated in terms of the organization's contribution to society.
- Is a succinct statement of what an organization will do for future generations and how it wants to be perceived.

### Characteristics of Effective Visions

- Should be challenging
- A clear vision statement is compelling and unites everyone in the organization.
- Stating an ambitious future state that will
  - motivate employees at all levels
    - challenge management and employees alike to action
  - drive the strategies that the company’s management will formulate and implement in order to achieve the vision.
  - reflect organizational values and inspire and

### Examples

- **Du Pont’s** mission statement says,
  - “Our vision is to be the world's most dynamic science company, creating sustainable solutions essential to a better, safer and healthier life for people everywhere.”
- **Hilton Worldwide**
  - To fill the earth with the light and warmth of hospitality.

➤ After the vision comes the company’s values

### Statement of the Company’s Values

- Values state how managers and employees should behave and do business.
- Values are the foundation of its **organizational culture**.
  - The organizational culture consists of the values, norms and standards that govern how the company’s employees work to achieve the company’s mission and goals.
  - A deep respect for the interests of customers, employees, suppliers and shareholders has been associated with high performance in firms and vice versa.



### Statement of the Company's Goals

- Most companies' primary goal is to **maximize shareholder returns**, which accomplished through
  - high profitability and
  - sustained profit growth.
  - However, pursuit of current profits **should not** be permitted to lead to management actions that will be to the detriment of long-term profitability and profit growth.
    - For instance, cutting expenditures for research and development, marketing, and new capital investments will increase short-term profits, but it will do so at the expense of long-term profits.
    - Furthermore, too much pressure to increase current profits can lead managers to take actions that are unethical, such as misrepresenting the true performance of the company to shareholders and others.

### Characteristics of well-constructed Goals

- precise and measurable
  - crucial and address important issues
  - challenging while at the same time being realistic
  - specify when they should be achieved
  - clearly stated in specific terms
  - communicated to all individuals who will be impacted by them.
- In order for plans to be as effective as possible, they must be **coordinated among the different units** and departments in the company so that they are in alignment with the larger goals of the company.
- If plans are not coordinated and aligned with the corporate goals, different parts of the company may be working at cross-purposes and the company will not move in a positive direction.

Various types of plans are used to match what is being planned with the company's goals.

### LOS How mission leads to the formulation of long-term objectives

Demonstrate an understanding of how mission leads to the formulation of long-term business objectives such as business diversification, the addition or deletion of product lines, or the penetration of new markets.

#### Types of Plans and General Principles

- **Strategic Plans (Long-Term Plans)**
- **Intermediate Plans**
- **Short-Term Plans**

#### Types of Organizations Goals

- Strategic Goals
- Tactical Goals
- Operational Objectives

### Strategic Plans (Long-Term Plans)

- The company's top management does the strategic planning.
- **Strategic plans** are broad, general, long-term plans (usually five years or longer) and are based on the objectives of the organization.
  - The plan is updated, or **rolled forward**, each year.
  - Strategic planning is **neither detailed nor focused on specific financial targets**, but instead looks at the strategies, objectives and goals of the company by examining both the internal and external factors affecting the company.



- The results of this annual planning process are usually used, along with tactical and operational planning, in **developing the budget for the coming year**.
  - In this way, the strategic plan is used to determine resource allocation within the company.
- Strategic planning is **directional**, rather than operational. This means that the company focuses on where it wants to go instead of specifically how it will get there.

**Note:** The longer the time frame of the plan, the higher up in the organization the planning should be done. Similarly, the shorter the time frame of the plan, the lower in the organizational hierarchy the planning should be prepared.

### LOS Characteristics of successful strategic plans

Identify the characteristics of successful strategic plans

### Characteristics of successful strategic plans

A successful strategic plan is one that:

1. Assists the organization in achieving its long-term goals and objectives.
2. It has well-defined goals consistent with the strategic plan and the mission from which the plan we derived.
3. It also has SMART objectives, objectives that are:
  - Specific
  - Measurable
  - Achievable
  - Realistic
  - Timely

### Strategic Goals

- established at the highest levels of an organization.
- part of the firm's strategic plan.
- long range in nature.
- Examples:
  - business diversification,
  - the addition or deletion of product lines, and
  - the penetration of new markets.

*Strategic goals require additional goals to be achieved at the tactical level.*

### Intermediate Plans

The **strategic plan** is then broken down into **intermediate or tactical plans** (one to five years), which are designed to implement specific parts of the strategic plan.

- Upper and middle managers develop tactical plans.
- Operational plans are developed by middle and lower-level managers.
  - For example, the board of directors **should not** be involved in developing weekly work plans for an assembly line.

### Tactical Goals

- established at middle and lower levels of an organization.
- established by business (also referred to as responsibility centers and strategic business units {SBUs}) or functional departments





## Short-Term Plans

- All shorter-term plans need to **work toward the strategic** plans of the company.
- **Short-term or operational plans** are the primary basis of **budgets**.
- Operational plans refine the overall objectives from the strategic and tactical plans in order to develop the **programs, policies**, and performance expectations required to achieve the company's long-term strategic goals.
- Short-term objectives and the tactics to achieve them *should flow directly* from the organization's strategic plan and *should be designed to achieve* the goals and objectives set forth in the strategic plan. The short-term objectives would be *milestones* along the road to the achievement of the long term goals.

## Objectives

- provide the details or actions required to support goals.
- Well-conceived objectives specify
  - the quantitative measures that will be used to track progress and performance-the desired action.
  - the timing of the action
  - the level of performance desired,
  - and the function or individual responsible for the action.
- If one goal needs the achievement of multiple objectives, so all the objectives of different departments must be completed to realize the benefit of the goal.

Figure 1B-9 Comparison of Strategic and Operational Plans

	Strategic Plan	Operational Plan
<b>Focus</b>	Underlies both long- and short-run planning; provides the basis for the budget	Formulates specific goals for each business with detailed revenue and expense budgets
<b>Issues Examined</b>	Identifies and analyzes issues such as: <ul style="list-style-type: none"> <li>• New global market entrants</li> <li>• Economic conditions</li> <li>• Plans for diversification</li> </ul>	Identifies and analyzes issues such as: <ul style="list-style-type: none"> <li>• Quarterly earnings</li> <li>• Inventory levels</li> <li>• Major capital expenditures</li> <li>• Marketing plans</li> <li>• Productions plans</li> </ul>
<b>Development</b>	Flows from top down; reflects a comprehensive analysis of external and internal factors	Flows from bottom up; recommends specific options for the upcoming year
<b>Control</b>	Reviewed annually and updated as needed to reflect high-level changes	Reviewed and updated/modified periodically throughout the year to address changing needs (such as lagging major product sales, competitors' new pricing structures, newly opened distribution channel)

Q. A firm's statement of broad objectives or mission statement should accomplish all of the following except

- Outlining strategies for technological development, market expansion, and product differentiation.
- Defining the purpose of the company.
- Providing an overall guide to those in high-level, decision-making positions.
- Stating the moral and ethical principles that guide the actions of the firm.



Answer (A) is correct. The determination of organizational objectives is the first step in the planning process. A mission statement is a formal, written document that defines the organization's purpose in society, for example, to produce and distribute certain goods of high quality in a manner beneficial to the public, employees, shareholders, and other constituencies. Thus, a mission statement does not announce specific operating plans. It does not describe strategies for technological development, market expansion, or product differentiation because these are tasks for operating management. Analyzing and reviewing departmental budgets is an aspect of operational management and not a part of strategic planning. Analysis of the current month's budget variances is not an aspect of strategic planning. Setting the target product mix and production schedule for the current year is not a concern of strategic analysis because it is a short-term activity. (GL/CMA)

#### Importance of aligning long-term objectives with other tactical short term plans and budget

Explain why short-term objectives, tactics for achieving these objectives, and operational planning (master budget) must be congruent with the strategic plan and contribute to the achievement of long-term strategic goals.

### Alignment of Tactics with Long-Term Strategic Goals

Strategic plan precedes an operational plan; the strategic plan provides the foundation upon which the more detailed operational plan is developed. In that sense, strategic plans are "macro" plans and operational plans are "micro" plans.



### Importance of Strategy in Budgeting

A prerequisite for budget development is a strategic analysis that matches an entity's capabilities with available marketplace opportunities.



A firm's **strategy** is the *path* it chooses for attaining its long-term goals and mission.(B).

**Strategic analysis** is the basis for both long-term and short-term planning. (IMA)  
In turn, these plans lead to the formulation of budgets.

**Budgets** provide feedback to managers about the likely effects of their strategic plans. Managers use this feedback to revise their strategic plans.(H)

**Strategy** is the **organization's plan** to match its strengths with the opportunities in the marketplace to accomplish its desired goals over the short and long term.

**Strategy** is the starting point in preparing its plans and budgets.



**Budgeting** is a common accounting tool that companies use for implementing strategy, as budgeting facilitates movement toward strategic goals. (H,IMA)

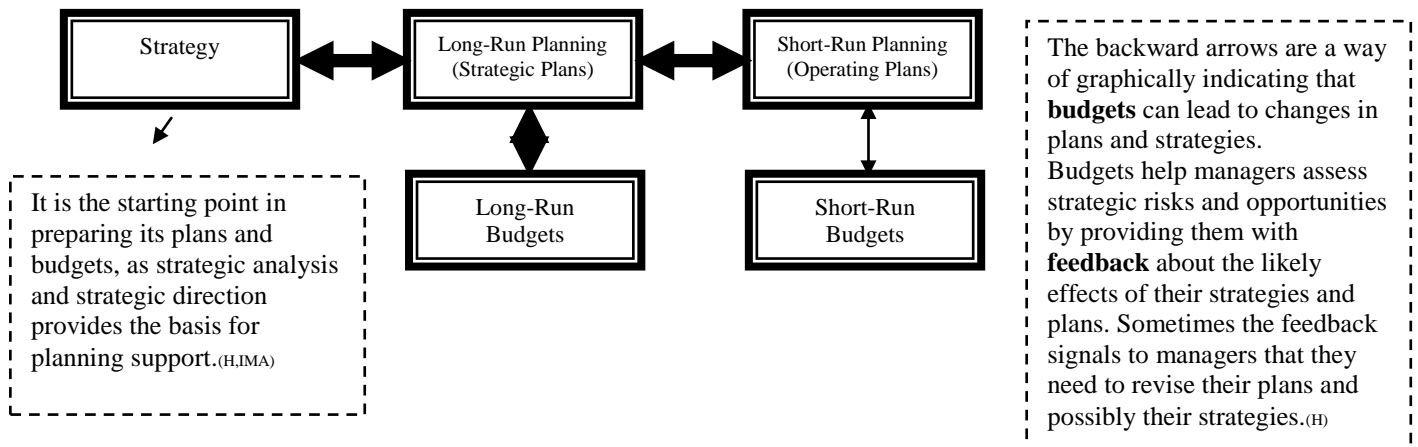
A **budget** should start with a careful review and study of the organization's strategic plan. The objective is to build a budget to achieve the organization's strategic goals and objectives. (B)



By not relying on its strategic plan, an organization very likely would not be able to fully utilize its strengths and take full advantage of opportunities. Ignoring the strategic plan can result in **not** adequately funding the projects and initiatives that are critical to achieving results aside from the daily operations of taking and fulfilling sales orders. (B)

## Strategy, Planning, and Budgets

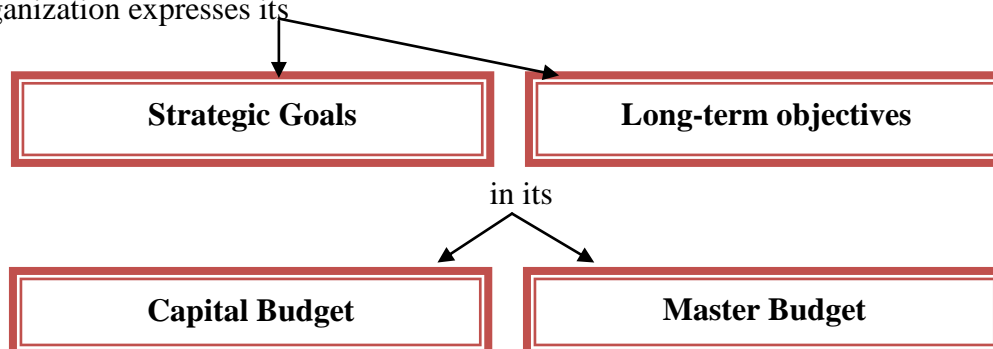
Strategic plans are expressed through long-run budgets and operating plans are expressed via short-run budgets. But there is more to the story! The exhibit shows arrows pointing backward as well as forward. (H)



## Resource Allocation

All entities have a finite amount of resources and want to make the most of their capital. The allocation of scarce resources among competing opportunities is accomplished through implementation of a strategy. (IMA)

An organization expresses its



## Strategy

**Strategy** provides the framework within which a long-range plan is developed. (B)

Implementing the **strategy** requires formulation of **long-term plans**, and **long-term plans** are implemented using a **budget process**. (IMA)



### Long-term Planning

While a strategy is the starting point for achieving organizational goals, a long-term plan is needed to ensure that the strategy is implemented. (IMA)

The organization's long-range plan identifies required actions over a 5- to 10 year period to attain the firm's strategic goal(s). (B)

**Planning for the long term** can involve discontinuing certain operations over time, arranging for equity or debt financing, and allocating resources gradually to new branches of business. Such major reorganizations can be accomplished only over a period of time and usually involve the use of capital budgeting part of the master budget). (IMA)

**Long-range planning** often entails **capital budgeting**, which is a process for evaluating, selecting, and financing major projects such as purchases of new equipment, construction of a new factory, and addition of new products.

**Capital budgets** are prepared to bring an organization's capabilities into line with the needs of its long-range plan and long-term sales forecast. An organization's capacity is a result of capital investments made in prior budgeting periods

**Capital budgeting** is the process of allocating resources to an entity's proposed long-term projects. Because buildings, equipment, and hiring and training staff are all extremely expensive, such allocations must be made in accordance with strategy.

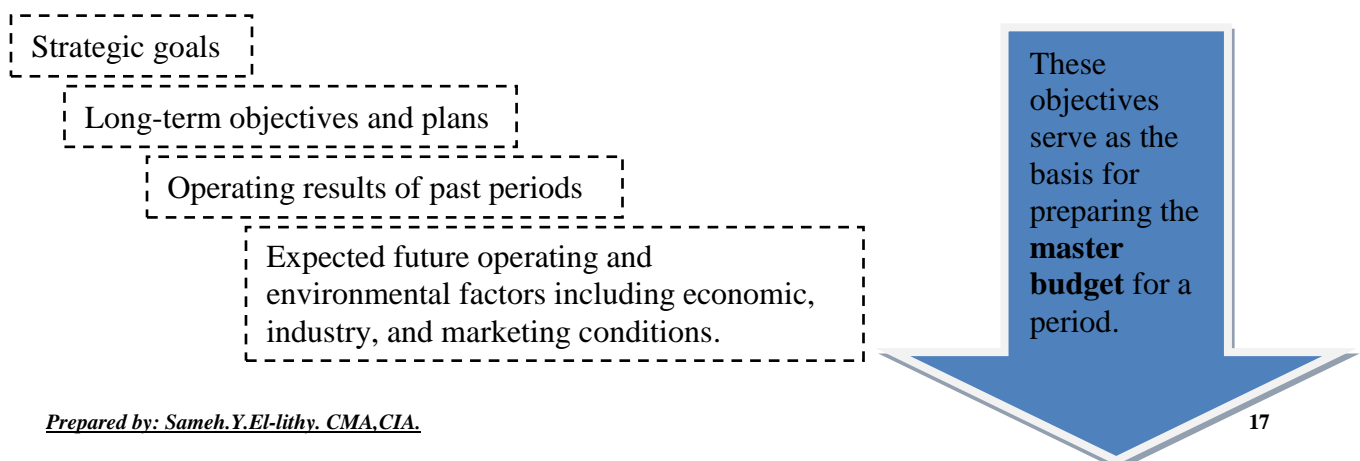
The **strategic goals and objectives** of the organization are, ultimately, accomplished through a focused set of initiatives and projects that creates value for the organization.

As such, it is important that the organization's **annual budgeting process** give prominence to a particular class of capital-budgeting expenditures: **strategic budget expenditures**, including those related to sustainability. Because such expenditures lead to long-term value creation and competitive advantage, it is important that they be clearly identified and, to the extent possible, protected. Too often, such budgetary amounts are buried in ledger accounts and therefore subject to reduced support if not outright cutting. This is true particularly when short-term financial performance is falling short of expectations, with the consequent "need" to cut spending. (B)

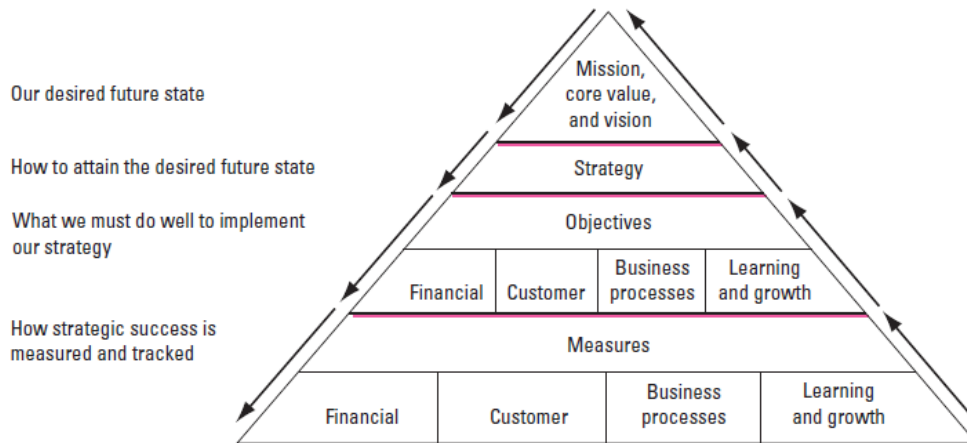
### Short-Term Objectives and the Master Budget

**Short-term objectives** are goals for the coming period, which can be a **month**, a **quarter**, a **year**, or any length of time desired by the organization for planning purposes. (B)

An organization determines **short-term objectives for the budget period based on**

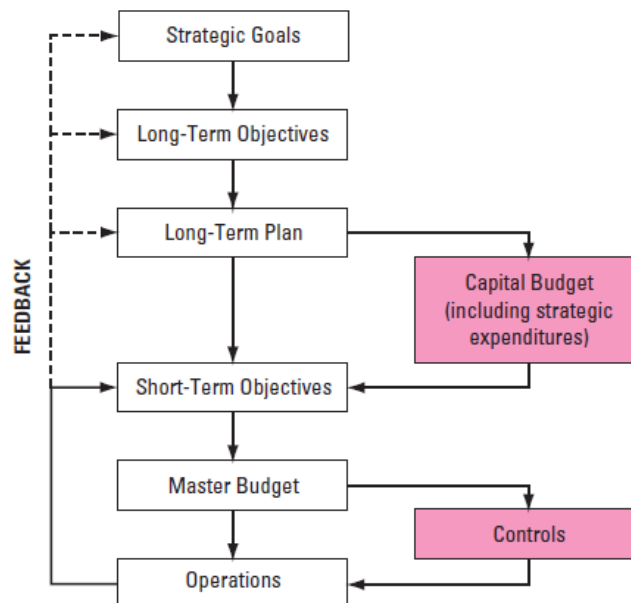


Recognizing that the objective of an organization is multidimensional, more and more organizations are employing strategy maps and their companion, the balanced scorecard, to translate their strategy into objectives. Exhibit 10.2 depicts a translation of strategy into short-term objectives with the balanced scorecard. The arrows suggest that the process is both top-down and bottom-up.<sup>(B)</sup>



A **master budget** translates the organization's **short-term objectives** into action steps. A master budget reflects an organization's operating and financing plans for the upcoming budget period.<sup>(B)</sup>

The relationships among strategic goals, long-term objectives and plans, short-term goals, budgets, operations, and controls. (next CSO discuss the master budget in depth)



The **master budget** is the overall plan for operations for a company or business unit over a year, an operating period, or a shorter duration. The master budget sets quantitative goals for all operations, including detailed plans for raising the required capital.<sup>(IMA)</sup>

The **master budget** is a map showing where the company is heading, and, if it is properly designed, it will show the company heading in the same direction as the strategy and the long-term plan. The budget is more precise and of shorter duration than long-term plans, and it is more focused on responsibility centers than longer-term planning tools. <sup>(IMA)</sup>



A master budget is broken down into an operating budget, a financial budget, and a capital budget.<sup>(IMA)</sup>

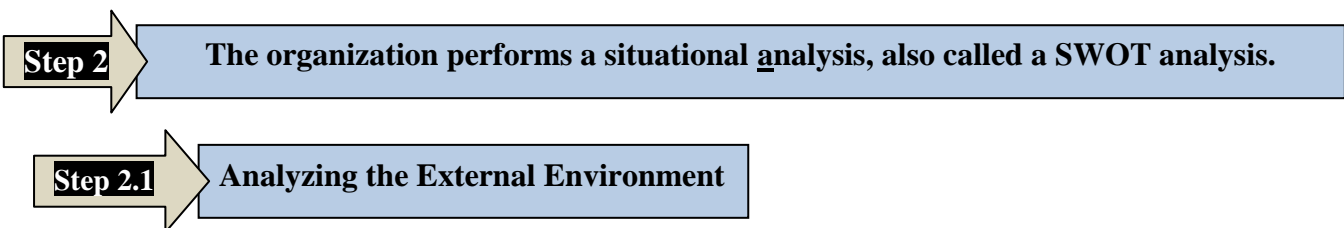
An **operating budget** identifies *resources* that are needed for operations and is concerned with the acquisition of these resources through purchase or manufacture. Production budgets, purchasing budgets, sales promotion budgets, and staffing budgets are all operating budgets.

A **financial budget** matches sources of funds with uses of funds in order to achieve the goals of the firm, including budgets for cash inflows, outflows, financial position, operating income, and capital expenditures.

A **capital budget** is used to plan how resources will be used to support significant investments in projects that have long-term implications. These projects could include the purchase of new equipment or investment in new facilities.

**Efficient allocation of organizational resources during the budgeting process can be achieved through:**

- The process of developing the operating budgets for the individual units in an organization.
- Making decisions about the most profitable way to utilize the resources available.



After defining the company's mission and developing its goals, the first step in developing a strategic plan is to analyze the forces that shape the industry in which the company operates and the competition within that industry in order to understand the **opportunities** available to the firm and any **threats** confronting the firm that can affect it in the pursuit of its mission. Understanding its opportunities and threats will enable the company to outperform the competition.

### External factors (recognition of OLT)

- Are external or environmental opportunities and threats that face the organization.
  - **Opportunities** are those things that would enhance the organization's competitive position and profitability.
  - **Threats** are *risks* that, if they occur, would be detrimental to the organization's competitive position and profitability.

The specific external factors affecting an organization's strategy are determined by its industry and broader environment. They are identified by considering

- a) **Macroenvironment** factors (economic, demographic, political, legal, social, cultural, and technical) and
- b) **Microenvironment** factors (suppliers, customers, distributors, competitors, and other competitive factors in the industry).

### (LOS) External factors that should be analyzed & recognition of OLT

Identify the external competitive environment factors that should be analyzed during the strategic planning process and understand how this analysis leads to recognition of organizational opportunities, limitations, and threats





Three environments should be examined, and the three environments are interrelated and shaping the organizational strategy:

1. The **industry** in which the company operates,
  - Market forces, industry trends, and competition.
2. The **country** or the **national environment** in which the company operates as well as the international environment,
3. And the wider environment, or **macroenvironment** in which the company operates.
  - Economic, demographic, political, legal and regulatory factors, social, cultural, and technical changes.
  - Stakeholder groups and their social concerns.
  - Globalization trends, emerging markets, and nongovernment organizations (e.g., United Nations, World Bank, etc.).

All of these external factors need to be examined during strategic planning in order to understand the opportunities available to the firm and any threats confronting the firm.

**Opportunities** arise when companies can *leverage* external conditions to develop and implement strategies that will make them more profitable.

**Threats** include conditions in the external environment that pose a *danger* to profitability

1. Identifying the **industry** the company competes in is the first step in external analysis.
  - Identifying companies that offer similar products to satisfy the same basic needs of their customers.
  - Implement an **industry analysis** by assessing the:
    - company's industry as a whole
    - company's competitive position within the industry
    - the competitive positions of its major rivals.

Once the boundaries of an industry have been identified, managers face the task of analyzing competitive forces within the industry environment in order to identify opportunities and threats. *Michael E. Porter's* well-known framework, known as "**The Five Forces Model**," has helped managers with this analysis. An extension of his model, shown in Figure 2.2, focuses on six forces that shape competition within an industry:

- (1) the risk of entry by potential competitors,
- (2) the intensity of rivalry among established companies within an industry,
- (3) the bargaining power of buyers,
- (4) the bargaining power of suppliers,
- (5) the closeness of substitutes to an industry's products and
- (6) the power of complement providers (Porter did not recognize this sixth force).

Michael Porter developed a model examining five forces and their collective role in determining the strength of competition and profitability. It includes an analysis of the five competitive forces that determine long-term profitability as measured by long-term return on investment.

#### Porter's Arguments:

- As the **forces grow stronger**, they **limit** the ability of established companies to raise prices and earn greater profits.



when one or more of these competitive forces is **strong**

it creates **limitations** on the company's ability to raise prices and earn greater profits.

- Within Porter's framework, a **strong competitive force** can be regarded as a **threat** because it depresses profits.
- A **weak competitive force** can be viewed as an **opportunity** because it allows a company to earn greater profits.
  - The **strength** of the forces may change overtime as industry conditions change. Managers face the task of recognizing how changes in the forces give rise to new opportunities and threats, and formulating appropriate strategic responses.
    - In addition, Porter says it is possible for a company, through its choice of strategy, to alter the strength of one or more of the forces to its advantage.

Michael Porter's model of competitive strategies has two variables: competitive advantage and competitive scope. The strategy adopted depends on whether the advantage sought is based on lower cost or product differentiation, and on whether the scope is broad or narrow. (GL/CMA)

**Figure 2.2 Competitive Forces**



According to Porter, the five forces that shape competition within an industry are:

### 1) The risk of entry by potential competitors.

#### Definition

**Potential competitors** are companies that are **not** currently competing in an industry, but have the **capability** to do so if they choose.

The risk of entry by potential competitors is a function of the height of barriers to entry, that is, factors that make it costly for companies to enter an industry.



Important barriers to entry include:

- economies of scale,
- brand loyalty,
- absolute cost advantages,
- customer switching costs, and
- government regulation.

The **greater** the costs potential competitors must bear to enter an industry,

the **greater** the barriers to entry, and the **weaker** this competitive force.

**High** entry barriers may keep potential competitors out of an industry even when industry profits are high.

**Note:**

The **most favorable industry condition** is one in which:  
**entry barriers are high** and **exit barriers are low.**

When the **threat** of new entrants is **minimal** and **exit** is **not difficult**,

**Returns are high, and risk is reduced in the event of poor performance.**

**Low entry barriers** keep long-term **profitability low** because new firms can enter the industry,

**increasing competition** and **lowering prices** and the **market shares** of existing firms.

Accordingly the prospects of **long-term profitability** depend on the industry's barriers to entry.

**IF**

Economies of scale (and learning curve effects) are **not significant**.

Costs of switching suppliers are **low**.

Existing firms **do not** have the cost advantages of vertical integration

Product differences are **few**.

Brand identity of existing products is **weak**.

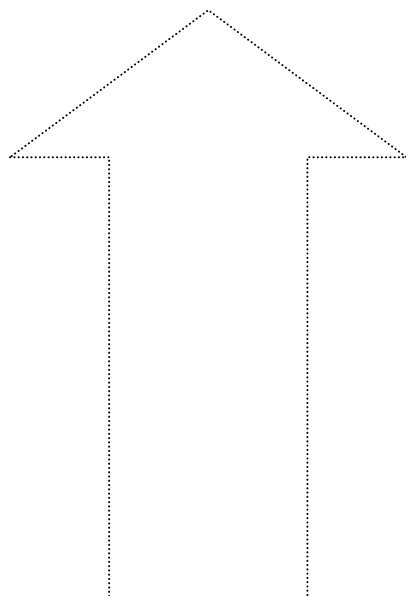
Access to existing suppliers is **not blocked**, and distribution channels are willing to accept new products.

Capital requirements are **low**

Exit barriers are **low**.

**P**

The government's policy is to **encourage new entrants**.



**Threat of entry will Increase**



## 2) The intensity of rivalry among established companies within an industry.

### Definition

Rivalry is the *competition among companies in an industry to gain market share from one another.*

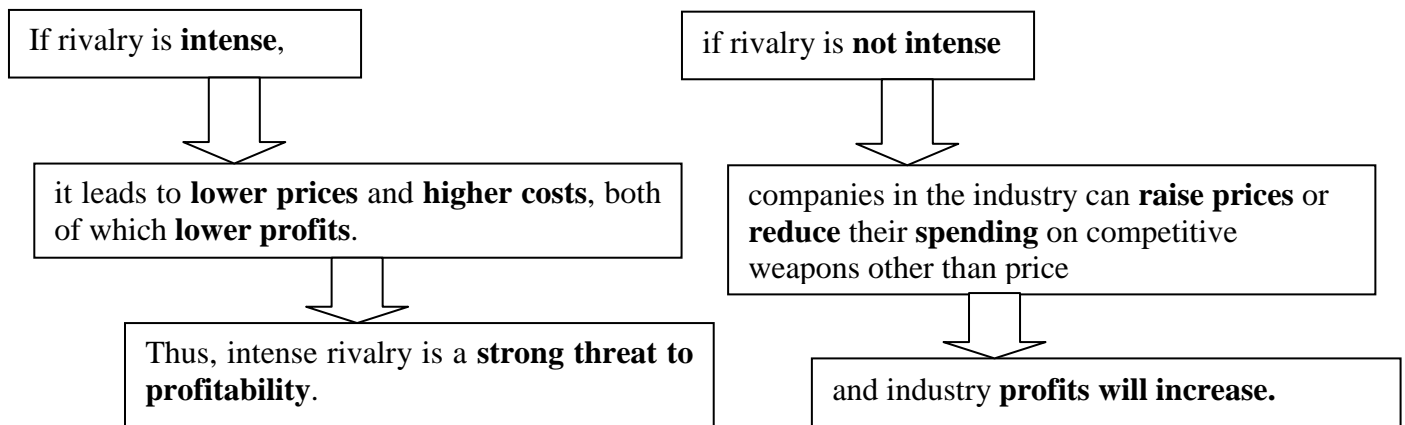
Weapons in the competition include:

- prices,
- product design,
- promotional efforts,
- selling efforts, and
- service and sup-port after the sale.

The intensity of rivalry among established companies within an industry is largely a function of four factors:

- (1) industry competitive structure,
- (2) demand conditions,
- (3) cost conditions, and
- (4) the height of exit barriers in the industry.

### Level of Intensity



### Factors Affecting the Level of Intensity

#### (1) Industry competitive structure

##### Definition

The competitive structure of an industry refers *to the number and size distribution of companies in it, something that strategic managers determine at the beginning of an industry analysis.*

Industry structures vary, and different structures have different implications for the intensity of rivalry.

**A fragmented industry** consists of a large number of small or medium-sized companies, none of which is in a position to determine industry price.

- Low-entry barriers.
- Undifferentiated product
- Accordingly, this constitutes a **threat** rather than an opportunity.

**A consolidated industry** is dominated by a small number of large companies (an oligopoly) or, in extreme cases, by just one company (a monopoly), and companies often are in a position to determine industry prices.

- High-entry barriers.
- Differentiated product
- Companies in consolidated industries sometimes seek to reduce this threat by following.



## Product Differentiation

### Less differentiation:

- tends to **heighten competition** based on price since customers often focus on price, terms, with price cutting leading to **lower profits** and **rivalry intensifies**.

### Highly Differentiated product:

- when customers develop preferences and brand loyalty due to large perceived differentiation. Product differentiation can foster buyer preferences and loyalties to particular suppliers. Naturally, organizations seek differentiation that is sustainable (e.g., a feature that is difficult to imitate, remains useful, and **customers are willing to pay for**).

### Customer switching costs.

- the costs of switching from one competitor's product to another.
  - If costs of switching suppliers are **high** this will **weaken** competition.
    - Changing a computer operating system is an example of a situation in which a customer typically would incur a general disruption of operations and expensive costs.

## (2) Demand Conditions and the stage of the industry life cycle.

- **Growing demand** tends to **reduce rivalry** because all companies can sell more without taking market share away from other companies. **High industry profits** are often the result.
- Conversely, **declining demand** results in **increased rivalry** as companies fight to maintain market share and revenues.
  - Demand declines when customers exit the marketplace, or when each customer purchases less, (i.e., The stage of the industry life cycle decline) . When this is the case, a company can only grow by taking market share away from other companies. Thus, declining demand constitutes a major threat, for it increases the extent of rivalry between established companies.

## (3) Cost Conditions/Structure (Whether fixed costs are high in relation to variable costs)

### High fixed costs indicate that rivalry will be intense.

- In industries where **fixed costs are high**, The **greater the cost** to generate a given amount of sales revenues, **the greater the investment intensity** and the need to operate at or near capacity, profitability tends to be highly leveraged to sales volume, and the desire to grow volume **can spark intense rivalry**.
  - Firms cannot cover their fixed costs and will not be profitable if sales volume is low.
    - Thus they have an **incentive to cut their prices** and/or **increase promotional spending** to drive up sales volume in order to cover fixed costs (i.e., **price cutting to sustain demand is typical**).
  - Capacity utilization is emphasized when fixed costs are high. Any excess capacity often leads to price cutting and a cycle of price matching.
  - Capacity expansion
    - If the size of the expansion must be large to achieve economies of scale, **competition will be more intense**. The need for large-scale expansion to achieve production efficiency may result in an excess of industry capacity over demand.

## (4) Exit Barriers

The height of exit barriers can influence the intensity of rivalry among established companies within an industry. Exit barriers are factors that prevent companies from leaving an industry.



- If **exit barriers are high**, companies may find themselves locked into an industry with declining demand, causing excess capacity which **leads to price wars**.
- An example of a **high exit barrier** is a large investment in assets that are specific to the industry. A company leaving an industry when the industry had over-capacity would not be able to sell its assets or would have to sell them at a very low price resulting in a large loss.

### 3) The bargaining power of buyers.

- If buyers such as large discount store chains have the ability to **bargain down prices** or to demand better product quality and service that would increase manufacturers' costs, an industry can become less profitable. Therefore, **powerful buyers are a threat**.

Buyers' bargaining power varies with the following factors:

- a) When purchasing power is concentrated in a **few buyers** or when buyers are well organized, their **bargaining power is greater**. This effect is reinforced when sellers are in a capital-intensive industry.
- b) **High (low) switching costs decrease (increase) buyers' bargaining power**.
- c) The **threat** of backward (upstream) **vertical integration**, that is, the acquisition of a supply capacity, **increases buyers' bargaining power**.
- d) Buyers are most likely to **bargain aggressively** when their **profit margins are low** and a supplier's product accounts for a substantial amount of their costs.
- e) **Buyers are in a stronger position** when the **supplier's product is undifferentiated**.
- f) The more important the supplier's product is to buyers, the **less bargaining power** they have.

### 4) The bargaining power of suppliers.

- If suppliers have the ability to **raise the prices of inputs** such as materials or direct labor (through labor unions, for instance) or to lower quality, it will raise the costs of companies in the industry. So **powerful suppliers are also a threat**.

Suppliers' bargaining power is greater when

- a) Switching costs are substantial.
- b) Prices of substitutes are high.
- c) They can threaten forward (downstream) vertical integration.
- d) They provide something that is a significant input to the value added by the buyer.
- e) Their industry is concentrated, or they are organized.

### 5) The closeness of substitutes to an industry's products.

- **The existence of close substitutes** for an industry's product is a **threat** because it limits the prices that can be charged for the product, the less attractive the industry is to potential entrants.
- If there are **few or no close substitutes**, then companies have the **opportunity** to raise prices without fear that their customers will switch to a substitute.

Substitutes are types (not brands) of goods and services that have the same purposes, for example, plastic and metal.

Structural considerations affecting the threat of substitutes are

- a) Relative prices,
- b) Costs of switching to a substitute, and
- c) Customers' inclination to use a substitute.





### Linkage of the Five Forces to Strategic Planning

The collective strength of the five competitive forces determines the ability of firms to earn rates of return on investment in excess of the cost of capital. In industries where the strength of the five forces is **favorable** (e.g., pharmaceuticals), *profits are attractive*. Understanding industry structure is a critical starting point during strategy formulation. The strongest force or forces assume increased importance during strategic planning and strategy formulation.

### A Sixth Force: Complementors (products that add value to (complement) the products of companies in an industry)

When complements are an important determinant of demand for an industry's products, industry profits critically depend upon an adequate supply of complementary products.

- When the number of complementors is **increasing** and producing attractive complementary products, **demand increases** and profits in the industry can broaden **opportunities** for creating value.
  - Conversely, if complementors are weak, and are not producing attractive complementary products, they can become a **threat**, **slowing** industry growth and **limiting profitability**.
2. Analyzing the **national and international environment** includes assessing:
- domestic as well as international political risk:
    - government expropriation and war
  - the impact of **globalization** (migration to international operations) on competition within the industry

### Linkage of national and international environment

Multinational or global organization must make considerable investments in resources, and these investments should be carefully crafted during strategic planning.  
An enterprise needs to acquire additional skills and competence as it moves through the stages of globalization.

3. Analyzing the **macroenvironment (macroeconomic) factors** includes assessing:
- **Economic condition** will affect demand and thus sales revenue and net income in the future.
    - Economic growth
      - leads to more consumer spending and gives companies the opportunity to expand their operations and increase their profits.
    - Economic recession
      - leads to a reduction in consumer spending and, in a mature industry, may cause price wars.
  - The level of **interest rates** affect any company's cost of capital and thus its ability to raise capital and invest and expand.
    - Rising interest rates will cause demand to decrease
    - Falling interest rates will cause demand to increase.
  - **Changes in currency exchange** rates affect the competitiveness of companies in international trade.
    - A declining local currency creates opportunities for increased international sales while decreasing foreign competition.
    - An increasing local currency causes the opposite condition.
  - Both **inflation** and **deflation**



- When inflation increases, it is difficult to plan on what the real return will be from an investment.
- Deflation also causes a lack of stability in the economy, because when prices are deflating, companies with a high level of debt and the obligation to make regular fixed payments on the debt can find themselves unable to service that debt.
- **Legal and Regulatory Factors.**<sup>1</sup>:
  - A host of **legal factors** can impact product/service success. Examples include:
    - Patents
    - Copyrights
    - Trademarks
    - Antitrust laws
    - Trade protectionism
    - Product/service liability issues
    - Environmental liability concerns
    - Employment law and litigation
    - Compliance with the Sarbanes-Oxley Act (SOX)
  - General examples of **regulatory factors** that can affect an organization's strategy include:
    - **Social Regulations**
      - **Environmental Protection Agency (EPA)** standards restrict pollution of air, water, and land.
      - **Occupational Safety and Health Administration (OSHA)** standards protect the safety and health of American workers,
      - **Federal Trade Commission (FTC) regulations** protect consumers, require truthful advertising by businesses, and prohibit collusion (e.g., price fixing and allocating markets).
    - **Industry Regulations**
      - **Federal Aviation Administration (FAA)** requirements for airports, air traffic control, safety issues, and routes.
      - **Federal Communications Commission (FCC)** regulations for radio and television frequencies.
      - **Food and Drug Administration (FDA)** requirements for safety in the food and drug industry and in medical device manufacturing.

#### Linkage of Legal and Regulatory Factors to Strategic Planning

The influence of legal and regulatory factors on an organization's strategy can be quite pervasive. The following are just a few examples of how legal and regulatory factors can affect an organization:

- Influence how a firm chooses to compete (e.g., through antitrust laws and licensing requirements).
- Limit global operations (e.g., through trade protectionism).
- Thwart or promote technology innovations (e.g., through tax and patent policies).
- Force environmental accountability (e.g., through EPA controls).
- Increase capital requirements (e.g., through required technical sophistication to meet governmental control requirements).

<sup>1</sup> Depending on the industry, legal and regulatory factors may be interrelated. But the two factors also have some key distinctions. Legal factors are rules of conduct promulgated by legal entities (e.g., federal, state, county provincial, or city laws); they are enforced by the threat of punishment. Regulatory factors (or regulations) are principles or rules designed to control or govern behavior. Theoretically, regulations are voluntary. But in many situations, regulations can have the force of law (i.e., regulatory factors are enforced most often by some form of self-regulation, with the threat of fines and/or disenfranchisement). For example, an organization may not be able to compete in a given market if it does not comply with regulatory factors.



- **Technological Changes**

- Technology can result in the **creation of industry substitutes** (e.g., wireless phones versus land lines).
- Technology can **reduce the need for large-scale distribution** and open a market up to new entrants (e.g., Web-based e-commerce technology versus traditional distribution channels).
- Technology **can accelerate new product designs** and facilitate short production runs in manufacturing-based industries, leading to either intense rivalry or monopoly.

#### Linkage of a Technology Assessment to Strategic Planning

Characteristics of a sound technology strategy include:

- Plans for attaining short-term and long-term objectives and major projects, including goals and milestones.
- Resource allocation.
- Alignment to the organization's financial plan and budget.

A technology strategy also should be easily understood and well communicated. The commitment of key people must be secured. The technology strategy establishes preliminary organizational priorities and commitments to innovation and technology development, always keeping the firm's strategic positioning in mind.

- **Stakeholder Groups and Their Social Concerns**

- Executives
- Managers and employees (including their families)
- The organization's board of directors
- Shareholders (stockholders)
- The industry in which the organization operates
- Customers
- Competitors
- Suppliers
- Business partners

#### Linkage of a Stakeholder Analysis to Strategic Planning

During strategic planning, it is important to identify the various stakeholders to understand their expectations and potential influences on the enterprise and to ensure that their needs and interests are addressed. If not on board, stakeholders can withhold resources and support and potentially undermine the legitimacy of the enterprise.

**Shareholder value and stakeholder analysis are not mutually exclusive.** Obvious decisions that balance expenses with revenues and are aligned to corporate goals are usually prudent courses for action. However, challenges can arise. For example, an organization may face a situation that violates the rights of one at the benefit for many. But most organizations also look for ways "to do the right thing" for all stakeholders while still achieving satisfactory profits for shareholders.



Step 2.2

Analyzing the Internal Environment

Analyze the organization's internal operating environment to identify the organization's strengths and weaknesses.

**Internal factors (recognition of SWC)**

- Are the organization's strengths and weaknesses.
  - **Strengths** are those things that would enhance the organization's competitive position and profitability;
  - **Weaknesses** are those that *detract* from its competitive position and profitability.

**Distinctive competencies** are the firm-specific strengths of a company. Valuable distinctive competencies enable a company to earn a profit rate that is above the industry average.

- The distinctive competencies of an organization arise from its:
  - **resources** (its financial, physical, human, technological, and organizational assets) and
  - **capabilities** (its skills at coordinating resources and putting them to productive use).

Therefore, Internal analysis focuses on reviewing the:

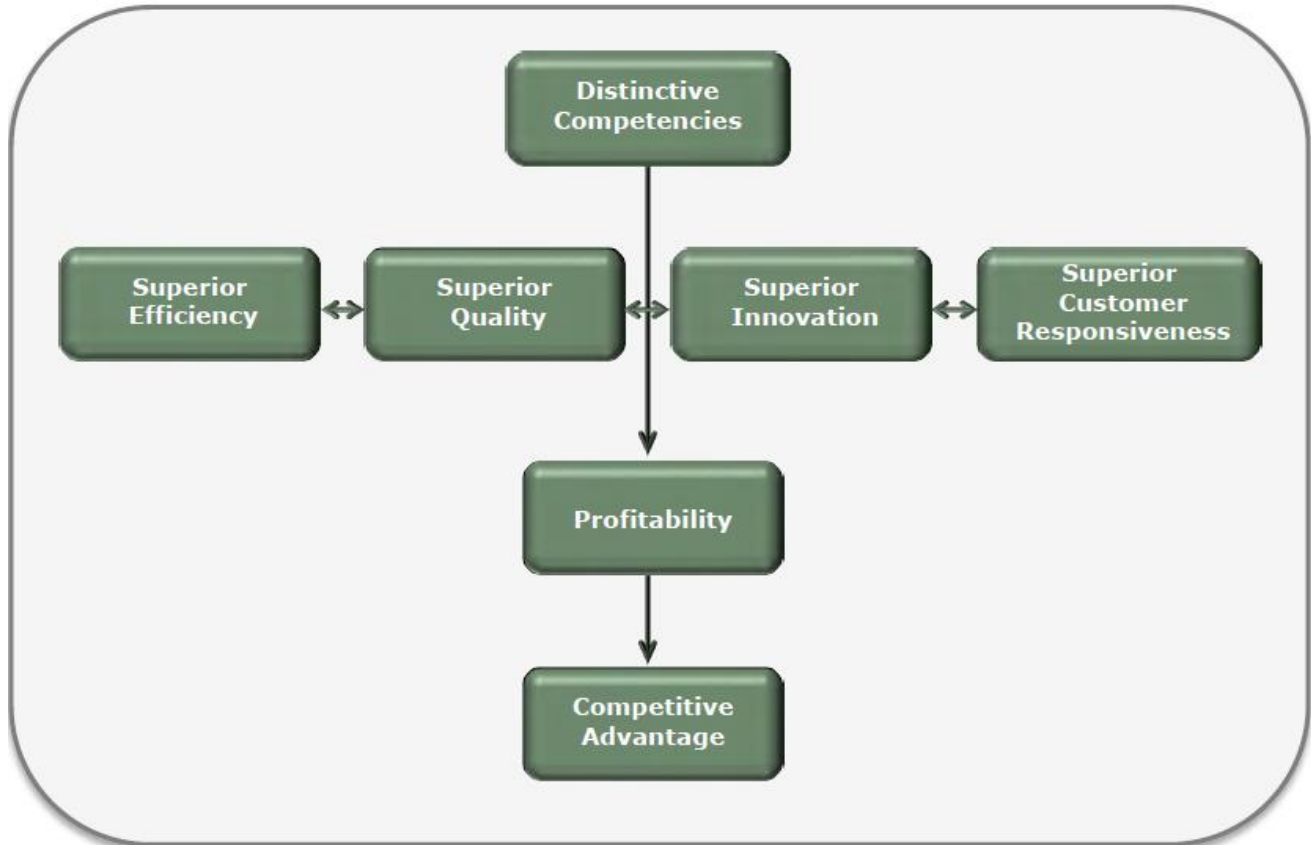
- Resources,
- Capabilities, and
- Competencies of a company.

**Competitive Advantage**

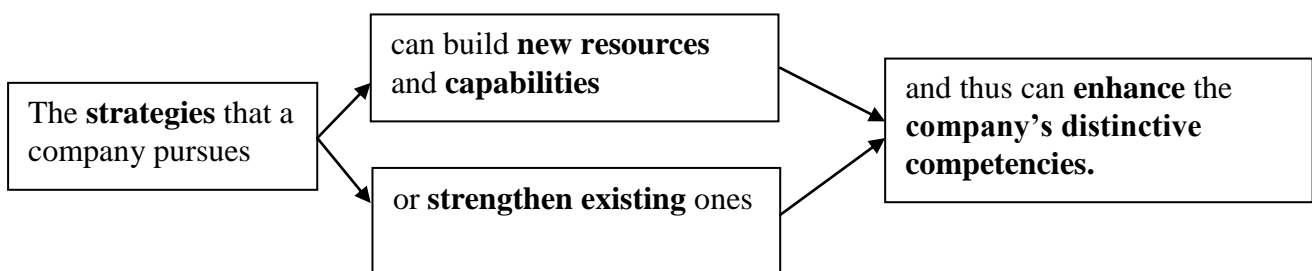
- A company is said to have competitive advantage when it is *more profitable* than the average company in its industry.
  - It has a sustained competitive advantage if it is able to continue **having above-average profitability over several years** as this is the primary objective of strategy.
- In order to achieve a competitive advantage, a company needs to pursue strategies that build on its existing resources and capabilities and formulate strategies that build additional resources and capabilities (develop new competencies).
- Competitive advantage achieved through superior performance, thus a company must have or create two basic things:
  - 1) **Distinctive competencies** and the superior efficiency (superior value creation) , quality, innovation and customer responsiveness that result from them.
    - **Distinctive competencies** stem from two sources:
      - **1) Tangible resources** (land, buildings, inventory, and cash) & **Intangible resources** (brand names, company reputation, intellectual property such as patents and trademarks, and employees' knowledge). and
      - **2) Capabilities (intangible)** that coordinate its resources and to put them to productive use. Therefore, **capabilities** are essential for distinctive competency, whereas special resources are not always necessary.
    - **Distinctive competencies** are strengths that a company has that enable it to have:
      - A differentiation advantage, meaning it is able to provide the customer with benefits that exceed those of its competitors, and/or
      - A cost advantage, meaning it is able to provide to the customer the same benefits as its competitors do, but at a substantially lower cost.



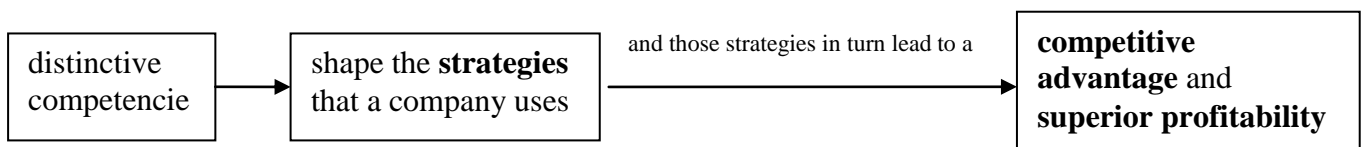
- In other words, to **create superior value (utility)** a company must lower its costs or differentiate its product so that it creates more value and can charge a higher price, or do both simultaneously.
- 2) The **profitability** that is derived from the **value customers** place on its products, the price that it charges for its products, and the costs of creating those products.



### Circular relationship between a company's distinctive competencies and its strategies

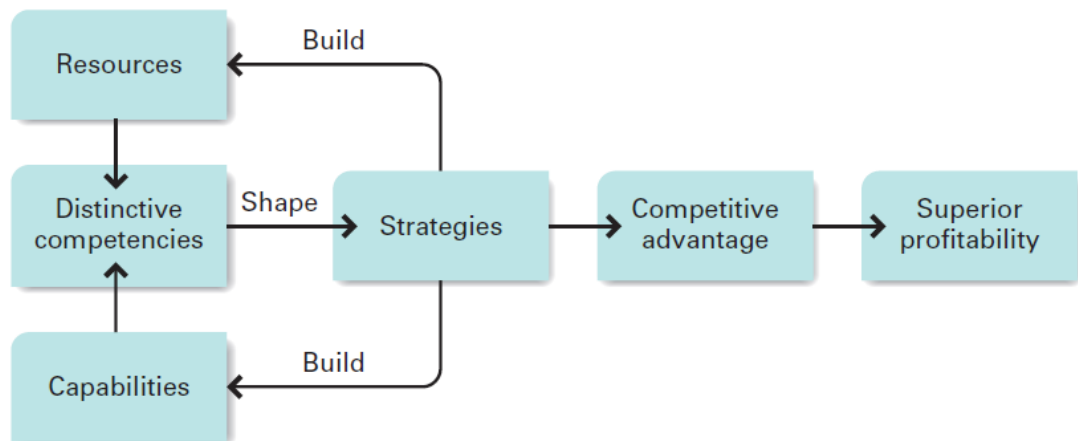


At the same time,





**Figure 3.1** Strategy, Resources, Capabilities, and Competencies



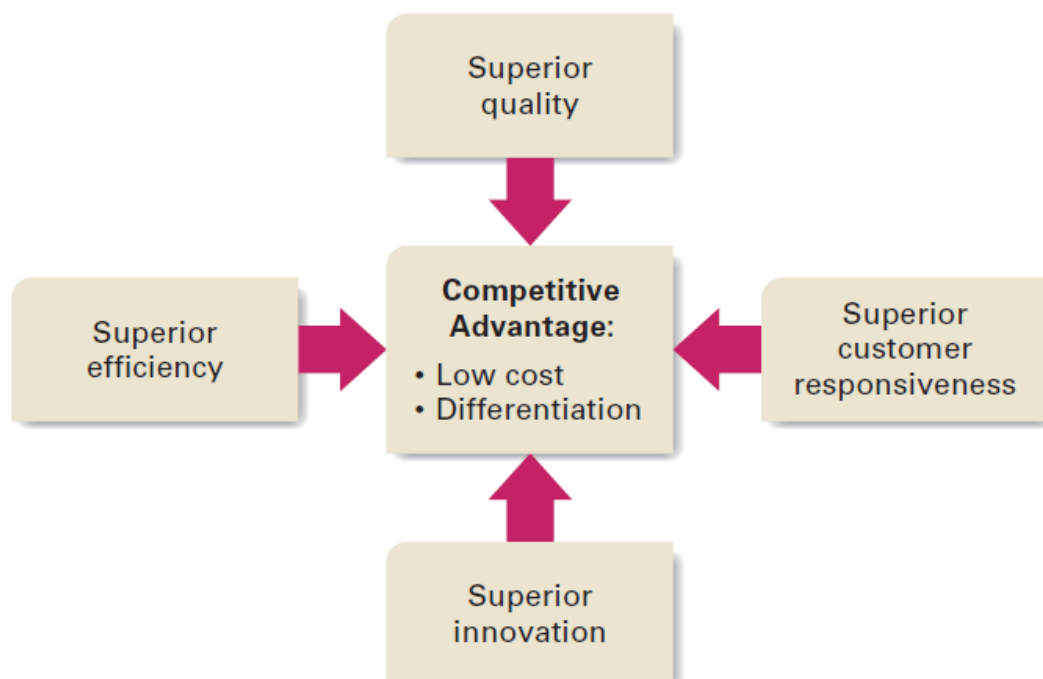
The four building blocks of competitive advantage are:

- efficiency,
- quality,
- innovation, and
- responsiveness to customers.

These are generic distinctive competencies:

- **Superior efficiency** enables a company to lower its costs;
- **Superior quality** allows it to charge a higher price and lower its costs; and
- **Superior customer service** lets it charge a higher price.
- **Superior innovation** can lead to higher prices, particularly in the case of product innovations, or lower unit costs, and in the case of process innovations.

**Figure 3.6** Building Blocks of Competitive Advantage







**Good Internal Analysis** = analyze the financial performance

If a company's managers are to perform a good internal analysis, they need to be able to analyze the financial performance of their company,

- identifying how the strategies of the company relate to its profitability, as measured by the return on invested capital.
- This involves comparing, or **benchmarking**, the company's current financial performance against that of its competitors as well as against the company's own historical performance.
  - management can see whether the company is more or less profitable than its competitors and
  - whether its profitability has been improving or deteriorating.
  - whether the strategies the company is pursuing are maximizing value creation,
  - whether the company's costs' are in line with those of their competitors, and
  - whether the company's resources are being used effectively.
- The greater the **utility** that customers receive from a company's products or services, the greater the number of **pricing** options the company has.
- If a company is going to achieve a sustained competitive advantage and superior profitability, its management needs to make the right choices with respect to **utility**, by using *differentiation* and *pricing*, given the demand in the company's market as well as the company's *cost structure* at various levels of output, all of that will be done through **value chain analysis**.

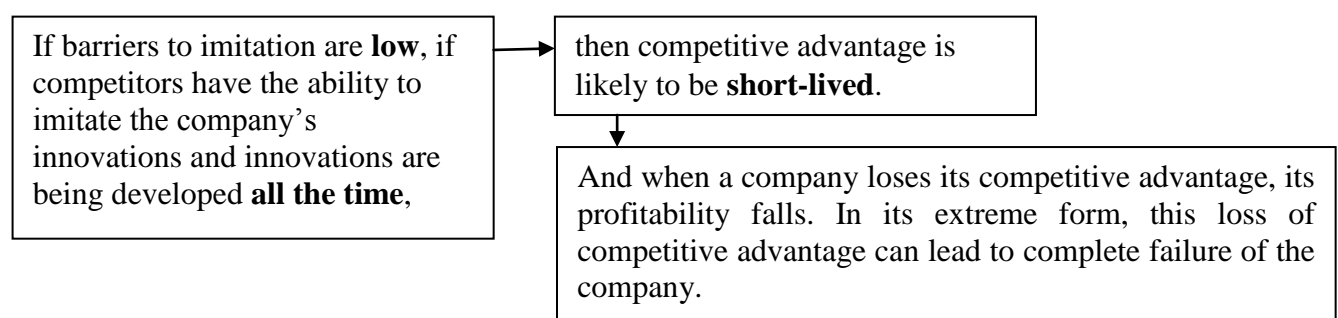
### **Durability of Competitive Advantage**

Another consideration in internal analysis is: How long any competitive advantage that a company has will last?

**The durability of a company's competitive advantage depends on**

- the **height of barriers to imitation**, or factors that make it difficult for a competitor to imitate the company's distinctive competencies, such as patents.
- the **capability of competitors** to imitate the company's competitive advantage, based upon their
  - **prior strategic commitments** that will make it difficult to respond to new competition if it would require changing its commitments.
  - and their **absorptive capacity** (the company's ability to make use of new knowledge)., and
- **environmental dynamism**.
  - When an industry is changing rapidly, a company with competitive advantage may quickly find its market position overtaken by a competitor with a new innovation.

### **Failing Companies**





Failing companies typically earn low or negative profits. Three factors seem to contribute to failure:

- organizational inertia in the face of environmental change,
  - (i.e., reluctance to change strategies in order to adapt to changing conditions in the company's competitive environment).
- the nature of a company's prior strategic commitments
- such as investments, which may limit its ability to imitate rivals and to be flexible, causing a competitive **disadvantage**., and
- the Icarus paradox.
- The Icarus paradox is based on a Greek myth. Icarus (a Greek figure) used a pair of wings that he stuck to his body with wax to escape from an imprisonment. But he flew so well that he flew too close to the sun. The heat of the sun melted the wax holding his wings together. He plunged to his death. The paradox is that his **greatest asset, his ability to fly**, caused his demise. This same paradox can be applied to many companies if they become too dazzled by their by their early and own success that they believe more of the same type of effort is the way to future success. They believe that the way to attain future success is to follow the same strategies that made them successful in the past. They can become so specialized and inner directed that they lose sight of reality and of what is needed to maintain their competitive advantage.

### Avoiding Failure

Avoiding failure requires a constant focus on the basic building blocks of competitive advantage:

- continuous improvement,
- identification and adoption of best industrial practice, and
- victory over inertia.
  - good leadership and appropriate changes in organizational structure and control systems are required in order to implement the changes.

The strategy-making process includes both strategy formulation and strategy implementation.

- **Strategy formulation** is the process of selecting strategies.
- **Strategy implementation** is the process of putting the selected strategies into action. It involves designing, delivering and supporting products; improving efficiency and effectiveness of operations; and designing the organization structure, control systems, and culture.

**Step 3****Formulating Strategies (SWOT Analysis also called situational analysis).**

Formulating and selecting strategies that, consistent with the organization's mission and goals, will **optimize** the organization's strengths and **correct** its weaknesses and limitations for the purpose of **taking advantage** of external opportunities while countering external threats (SWOT analysis);

SWOT analysis consists of generating a series of strategic alternatives that could be pursued given the company's strengths, weaknesses, opportunities and threats in order to select the strategies that will do the best to align the company's resources and capabilities to the demands of its environment.

### Formulation and Selection of Strategy

In developing successful strategies, managers consider questions such as the following: (H)

- What are our objectives?
- How do we create value for our customers while distinguishing ourselves from our competitors?
- Are the markets for our products local, regional, national, or global? What trends affect our markets? How are we affected by the economy, our industry, and our competitors?
- What organizational and financial structures serve us best?
- What are the risks and opportunities of alternative strategies, and what are our contingency plans if our preferred plan fails?

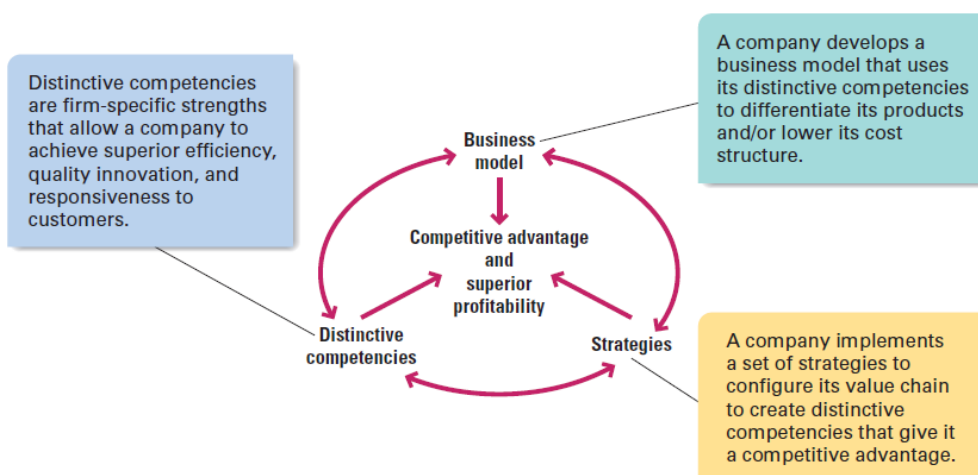
Management selects a set of strategies that will create and sustain a competitive advantage for the company. They consider a range of strategies. The general classifications of strategies considered are: Functional-level, Business-level, Global & Corporate-level strategy.

The strategies that emerge from SWOT analysis should be compatible with each other. Functional-level strategies should support the company's business-level and global strategies. And corporate-level strategies should also support business-level strategies.

The strategies selected by the company will constitute its **business model**. Remember we have said that a company's business model is its managers' idea of how the set of strategies and capital investments that the company makes **should fit together** to generate above-average profitability and, at the same time, profit growth.

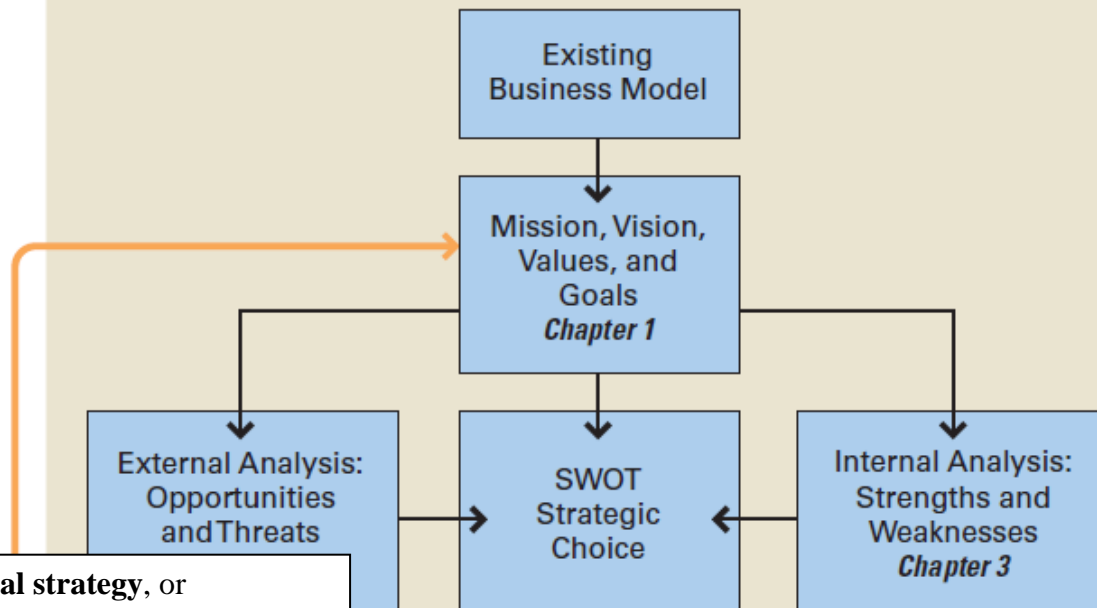
SWOT analysis enables management to choose among possible business models and to fine-tune the business model selected.

**Figure 3.8** Competitive Advantage and the Value Creation Cycle





## STRATEGY FORMULATION



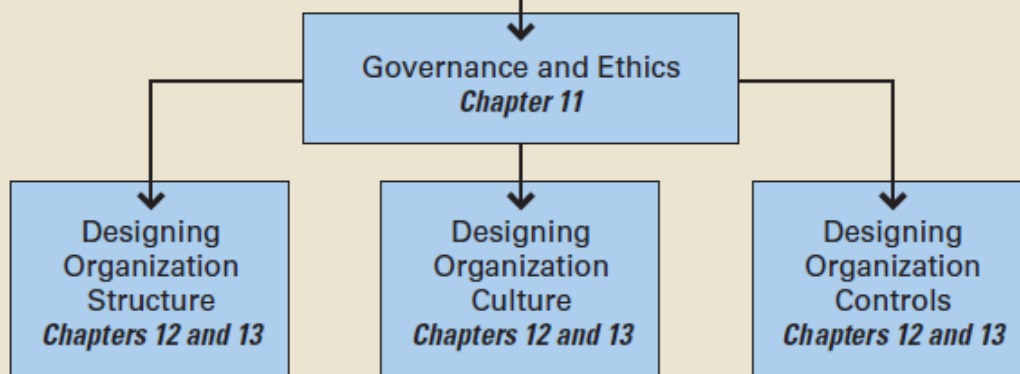
**Global strategy**, or considering how to expand operations outside the home country.

**Business-level strategy**, which includes the position of the business in the marketplace as well as different positioning strategies that could be used. Some examples are (1) cost leadership, (2) differentiation, (3) focusing on a particular marketing niche or segment, or (4) a combination of more than one of these.

**Functional-level strategy**, for the purpose of improving operations inside the company. These operations include areas such as manufacturing, marketing, materials management, product development, and customer service.

**Corporate-level strategy**, considering what business or businesses the company should be in so as to maximize its long-run profitability and profit growth.

## STRATEGY IMPLEMENTATION





## Functional-level strategy

### Purpose

- Improve the effectiveness of a company's operations inside the company
  - These operations include areas such as manufacturing, marketing, materials management, product development, and customer service.
- Which in turn, improves the company's ability to achieve:
  1. superior efficiency,
  2. quality,
  3. innovation, and
  4. customer responsiveness.
- Those four generic distinctive competencies will determine whether
  - the company's products and services will be **differentiated** from those of its competitors.
  - the company will have a **low cost structure**.
- Superior efficiency can be increased by:
  - Adopting just-in-time inventory systems
  - Using flexible manufacturing technologies.
- Superior quality consists of
  - reliability (through the use of Six Sigma) and
  - excellence.

### Superior innovation

Innovation can result in

- improvements to the excellence of existing products as well as new products.
- finding ways to reduce costs.

### Superior responsiveness to customers

Responsiveness to customers is an important way for a company to build brand loyalty and thus differentiate itself from its competitors.

## Business-Level Strategy

Business-level strategy relates to the **business's position** in the market. Successful selection and pursuit of a **business model** is what permits a company to compete effectively. Business-level strategies that create competitive advantage contribute to a successful business model. To create a successful **business model**, managers must choose business-level strategies that give the company a competitive advantage over its rivals; that is, they must optimize competitive positioning.

They must first decide on:

- (a) customer needs, or what is to be satisfied;
- (b) customer groups, or who is to be satisfied; and
- (c) distinctive competencies, or how customer needs are to be satisfied.

These decisions determine which strategies managers formulate and implement to put a company's business model into action.



## Four Generic Competitive Strategies

The value creation frontier can be reached by choosing among four generic competitive strategies:

- cost leadership,
- focused cost leadership,
- differentiation, and
- focused differentiation.

*Deciding between these strategies is a critical part of what managers do.<sup>(H)</sup>*

### Role of cost management

The role of cost management is to support the firm's strategy by providing the information managers need to succeed in their product development and marketing efforts, such as the expected cost of adding a new product feature, the defect rate of a new part, or the reliability of a new manufacturing process.<sup>(B)</sup>

Management accountants work closely with managers in **formulating strategy** by providing information about the sources of competitive advantage—for example, the cost, productivity, or efficiency advantage of their company relative to competitors or the premium prices a company can charge relative to the costs of adding features that make its products or services distinctive.

**Strategic cost management** describes cost management that specifically focuses on strategic issues.

### Developing a Competitive Strategy

In developing a sustainable competitive position, each firm purposefully or as a result of market forces arrives at one of the two competitive strategies: cost leadership or differentiation

#### (1) Cost Leadership to achieve competitive advantage

##### Cost Leadership

Cost leadership is a strategy in which a firm outperforms competitors in producing products or services at the lowest cost for these firms, cost management is critical.<sup>(B)</sup>

**Cost Leader** (A company using cost leadership)

- Firms known to be successful at cost leadership are typically very large manufacturers and retailers, such as Wal-Mart, Texas Instruments, and Dell.
- normally has a relatively large market share and tends to avoid niche or segment markets by using the price advantage to attract a large portion of the broad market.

#### Cost Leader achieve Higher profits through Lower Prices

- They have been profitable and have grown over the years on the basis of providing quality products or services at low prices by judiciously managing their costs.<sup>(H)</sup>
- makes sustainable profits at lower prices, thereby limiting the growth of competition in the industry through its success at reducing price and undermining the profitability of competitors, which must meet the firm's low price.

#### Sources of Cost Advantages

- Cost advantages usually result from
- **productivity** in the manufacturing process, in distribution, or in overall administration.
  - For example, technological innovation in the manufacturing process and labor savings from overseas production are common routes to competitive productivity.
- its distinctive competencies in manufacturing, materials management, and information technology and/or an organizational structure and culture that will allow it to implement this strategy.





### A potential weakness of the cost leadership strategy

- is the tendency to cut costs in a way that undermines demand for the product or service
  - for example, by deleting key features, This will lead to customer dissatisfaction and in turn, to decreases in demand and sales. The resulting decreased profitability.
  - The cost leader remains competitive only so long as the consumer sees that the product or service is (at least nearly) equivalent to competing products that cost somewhat more.
- The danger in this strategy is that competitors may find ways to lower their cost structures, too.

(2) **Focused cost leadership**, or competing within a narrow market segment using the strategy of cost leadership.

- Focused cost leadership means developing the correct strategies to serve just 1 or 2 market segments.
- A company using focused cost leadership may be a **local** business reaching a local market.
- The company competes with the national cost leader only in markets where it does not have a cost disadvantage because of its smaller size.
- The focused cost leader might concentrate on **low volume** products for which it has a cost advantage over a national chain because it purchases its materials locally and economies of scale do not exist in that market.
  - An example of a focused cost leader might be a local brickyard, where bricks are manufactured on site and delivered directly to local construction sites. That company might very well have a cost advantage over a brick manufacturer marketing nationally. The national brick manufacturer could have very high costs to transport its bricks to distributors for further sale and delivery to construction sites.

(3) **Differentiation strategy** (sometimes called: **product leadership**) to achieve competitive advantage

#### Differentiation

The differentiation strategy is implemented by creating a product or service that is unique/ unusual in some important way, usually:

1. higher excellent quality,
2. customer service product features, responsiveness to customer needs, or
3. superior innovation.

#### Differentiator

- A differentiator can charge a **higher price** than its closest competitors because of its perceived advantages to the customer.
- Firms known to be successful differentiator are cosmetics, fashion, and pharmaceutical firms, compete on the basis of product leadership, in which the unusual or **innovative** features of the product make the firm successful.
  - For these firms, the critical management concern is maintaining product leadership through product development and marketing.<sup>(B)</sup>
- Most industries, including, consumer electronics, and clothing, have differentiated firms. The appeal of differentiation is especially strong for product lines for which the perception of quality and image is important, as in cosmetics, jewelry, and automobiles.
  - Tiffany, Bentley, Rolex, Maytag, and BMW are good examples of firms that have a differentiation strategy, Apple Inc., the maker of iPods and iPhones, and Johnson & Johnson, the pharmaceutical giant.



Sometimes a differentiation strategy is called **product leadership** to refer to the innovation and features in the product. In other cases the strategy might be called a **customer-focused** or customer-solution strategy, to indicate that the organization succeeds on some dimension(s) of customer service. This perception allows the firm to charge **higher prices** and outperform the competition in profits without reducing costs significantly.

#### **Differentiator achieve Higher profits differentiated products**

- They generate their profits and growth on the basis of their ability to offer differentiated or unique products or services that appeal to their customers and are often priced higher than the less-popular products or services of their competitors.

#### **Sources of differentiated products**

- For instance, differentiation on the basis of innovation requires an effective **R&D function**.
- The differentiator must **control its costs** so that the price of the product is not greater than its customers will pay, but it must not minimize them so much that it loses its source of differentiation.

#### **A weakness of the differentiation strategy**

Is the firm's tendency to undermine its strength by attempting to lower costs or by ignoring the necessity of having a continual and aggressive marketing plan to reinforce the differentiation. If the consumer begins to believe that the difference is not significant, lower-cost rival products will appear more attractive. is (at least nearly) equivalent to competing products that cost somewhat more.

The danger with a differentiation strategy is that competitors may imitate successful differentiation, eliminating the advantage.

(4) **Focused differentiation**, or a business model that specializes in providing a differentiated product to serve the needs of just one or two market segments or niches.

#### **Focused Differentiator**

- positions itself to compete with the primary differentiator in the market but in only one or two of the market's segments.
  - To do this, it focuses on one type of customer, such as babies or elderly people, or on one type of product, such as organic foods.
  - The company can have greater knowledge of the needs of a small group of customers and can provide **superior responsiveness to those customers**.
  - Or, concentration on just a few products can allow the focuser to be **more innovative** than a larger company could be.

#### **Risk at Focused differentiation**

However, its risk is that its niche may disappear over time because of technology changes or changes in customers' tastes. One of the reasons that so many small companies go out of business is that their niche disappears.



### **Other Strategic Issues**

A firm succeeds, then, by adopting and effectively implementing one of the strategies explained earlier (and summarized in Exhibit 1.9 ).

Recognize that although one strategy is generally dominant, a firm is most likely to work hard at process improvement throughout the firm, whether cost leader or differentiator, and **on occasion to employ both of the strategies at the same time.**

However, a firm following **both** strategies is likely to succeed only if it achieves one of them significantly. A firm that **does not** achieve at least **one** strategy is **not likely** to be successful.

***“getting stuck in the middle”***

#### **Note:**

This situation is what Michael Porter calls “getting stuck in the middle.” A firm that is stuck in the middle is **not able to sustain a competitive advantage.**

For example, giant retailer Kmart/Sears has been stuck in the middle between trying to compete with Wal-Mart on cost and price, and with style-conscious Target on differentiation. Some have suggested that Kmart/Sears might find success by abandoning the suburban locations where Target and Wal-Mart are strong and instead focusing on their many urban locations where they offer convenience to the urban shopper.

### **Distinctive Aspects of the Two Competitive Strategies**

Aspect	Cost Leadership	Differentiation
Strategic target	Broad cross section of the market	Focused section of the market
Basis of competitive advantage	Lowest cost in the industry	Unique product or service
Product line	Limited selection	Wide variety, differentiating features
Production emphasis	Lowest possible cost with high quality and essential product features	Innovation in differentiating products
Marketing emphasis	Low price	Premium price and innovative, differentiating features

- Developing a competitive strategy is the first step for a successful business.
- The critical next step is to implement that strategy, and this is where the management accountant comes in.
- The management accountant works to implement strategy as a part of the management team, by contributing the management accountant’s specific expertise (cost management methods).



## Global Strategy

- Globalization follows a progression.
  - The migration from domestic to global operations typically evolves through a series of relatively predictable stages, from the ordinary initial stage of globalization “Export” to establish a separate “international division and/or sales subsidiaries” and as sales volume and the number of countries significantly increase, an organization evolves to the stage of an Multinational corporation (MNC) and finally to a global organization, the whole world is one market and National boundaries are seamless.
- For some companies, international expansion represents a way of earning greater returns by transferring the skills and product offerings derived from their distinctive competencies to markets where indigenous competitors lack those skills. As barriers to international trade have fallen, industries have expanded beyond national boundaries and industry competition and opportunities have increased.
  - Furthermore, the increase in sales volume that results can help a company realize economies of scale and experience learning curve effects, which can lead to a cost advantage.

### To compete successfully in the global arena,

- organizations must make considerable investments in resources, and these investments should be carefully crafted during strategic planning.
- It can perform each value creation activity in the country where the cost and quality of factors of production (land, labor, capital, energy) are best for that activity. This strategy is called **location economies**.
- Companies usually choose from four basic strategies in their international operations: (1) global standardization, (2) localization, (3) transnational, and (4) international.

### Global Standardization

- focus on reaping the cost reductions that come from scale economies and location economies.
- This strategy works if there are strong competitive pressures for cost reduction and the need to be locally responsive to customers is not great.

### Localization

- Customize their product offering, marketing strategy, and business strategy to national conditions.
- Localization works when consumer tastes vary among nations and when cost pressures are not too intense. This strategy can work
  - if the added value supports higher pricing and thus enables the company to recoup its higher costs.
  - if it creates greater local demand, which can allow the company to reduce its costs through economies of scale in its local markets.

### Transnational (strategy due to high competition)

- involves a simultaneous focus upon reducing costs, transferring skills and products, and being locally responsive. Implementing such a strategy may not be easy (combine high local responsiveness with low cost structure).
- used when requirements for local responsiveness are high and, at the same time, cost pressures are strong.
  - One way is to use centralized manufacturing of standard large-scale components and then to augment that with local assembly plants where local product features are added.



### International Strategy

- transfer the skills and products derived from distinctive competencies to foreign markets, while undertaking some limited local customization.
- used by companies that do not have great pressure to produce low-cost goods and do not have great pressure to be locally responsive.
  - Companies in this position usually centralize their product development while establishing manufacturing or marketing operations in each major geographic area where they do business. They may do some local customization of the product and their marketing strategy, but it is limited.

Five different ways of entering a foreign market: exporting, licensing, franchising, entering into a joint venture, and setting up a wholly owned subsidiary. The optimal choice among entry modes depends on the company's strategy.

### Strategic Alliances

Strategic alliances are cooperative agreements between actual or potential competitors. The advantages of alliances are that they facilitate entry into foreign markets, enable partners to share the fixed costs and risks associated with new products and processes, facilitate the transfer of complementary skills between companies, and help companies establish technical standards.

The drawbacks of a strategic alliance are that the company risks giving away technological knowhow and market access to its alliance partner while getting very little in return.

The disadvantages associated with alliances can be reduced if the company selects partners carefully, paying close attention to reputation, and structures the alliance in order to avoid unintended transfers of know-how.

*To compete successfully in the global arena, organizations must make considerable investments in resources, and these investments should be carefully crafted during strategic planning.*

### Corporate-Level Strategy (long-term perspective)

#### Benefits of formulating a corporate strategy

- enable a company, or one or more of its business units, to perform one or more of the value creation functions at a **lower cost** or in a way that allows for differentiation and a premium price.
- used to redefine and reposition the company's business model as needed to achieve and maintain its *position* in the changing environment through taking advantage of opportunities and defending against threats.
  - analyzing how emerging technologies might impact their business models, how customer needs and customer groups might change as a result, and what new distinctive competencies will be needed.
- Used to determine which industries the company should enter to maximize its long-run profitability.
- Companies can adopt one of the strategies: (1) horizontal integration, (2) vertical integration, (3) Strategic alliances, (4) Strategic outsourcing, and (5) Diversification.



## Step 4

## Developing and Implementing the Chosen Strategies

Implementing strategy involves decisions about organizational design & how to use the

1. organizational structure,
2. corporate culture and
3. control environment to achieve the company's goals and execute its business model.

These are

- the means the organization uses to *motivate* and *coordinate* its members to work toward achieving competitive advantage through its distinctive competencies.
- They determine its *members' behaviors*, *values* and *attitudes* and how the members will implement the organization's business model and strategies.

Incentive systems and employee performance evaluations must be designed so that they encourage employees to focus their efforts on achieving the entity's objectives.

This approach requires communication among senior managers, who devise strategies; middle managers, who supervise and evaluate employees; and human resources managers, who must approve evaluation and compensation plans.

Management accountants, guided by a strategic focus, have responded to the previous changes in the contemporary business environment with **13 methods** that are useful in implementing strategy in these dynamic times.(B)

The first **six** methods focus directly on strategy implementation

1. The balanced scorecard/strategy map (CMA P1.Sec.C),
2. Value chain (CMA P1.Sec.D),
3. Activity-based costing (CMA P1.Sec.D),
4. Business intelligence,
5. Target costing(CMA P2.Sec.C), and
6. Life-cycle costing (CMA P1.Sec.D).

The next **seven** methods help to achieve strategy implementation through a focus on process improvement

7. Benchmarking (CMA P1.Sec.D),
8. Business process improvement (CMA P1.Sec.D),
9. Total quality management ,
10. Lean accounting (CMA P1.Sec.D),
11. The theory of constraints (CMA P1.Sec.D),
12. Enterprise sustainability, and
13. Enterprise risk management (CMA P2.Sec.D).

## Step 5

## Strategic controls and feedback

**Strategic controls and feedback** are used to monitor progress, isolate problems, and take corrective action. Over the long term, feedback is the basis for adjusting the original mission and objectives

The Balanced Scorecard is a widely-used strategic performance management tool designed to manage strategic performance.





### How can an organization translate its strategy into a set of performance measures?

It can do so by developing a *balanced scorecard* that provides the framework for a strategic measurement and management system. The balanced scorecard measures performance from four perspectives. One dimension is financial, the other three dimensions are non-financial:

- (1) financial,
- (2) customer,
- (3) internal business processes, and
- (4) learning and growth.

### Companies use the BSC as a management tool to:

- Clarify and communicate strategy
  - that translates an organization's mission and strategy into a set of four performance measures.<sup>.(H)</sup>
  - transforms an organization's strategic plan from a passive document into the "marching orders" for the organization in its day-to-day activities.
  - The balanced scorecard enables execution of strategies. But a company's strategy influences the measures it uses to track performance in each of these perspectives.
    - A strategy is essentially a theory about how to achieve the organization's goals.<sup>.(G)</sup>
- Align individual and unit goals to strategy
  - promotes **goal congruence** by encouraging everyone in the organization to work toward the same goals.
- Link strategy to the budgeting process
- Get feedback for continuous strategy improvement
  - It provides a framework that not only provides **performance measurements** but helps management to identify what needs to be done and how its achievement can be measured.
- Balanced scorecard-A process of compiling and organizing the key performance indicators (KPIs) of an organization into four segments: financial, customer, internal business process, and learning and growth. Each KPI can be measured in a specific way so that it can be managed appropriately.



## Other Planning Tools and Techniques

### SWOT analysis

- involves Identifying and understanding the organization's strengths and weaknesses (internal factors) and the opportunities and threats external to the organization.
- helps the organization utilize and maximize its strengths, minimize and correct its weaknesses, exploit opportunities, and avoid or minimize risks.

### Michael Porter's five forces industry analysis involves

- analyzing the organization's environment to identify and minimize **threats** posed by the organization's competitors, supplies, and customers.
- The model is Porter's reaction to the ad hoc nature and lack of rigor in the SWOT analysis.

### Situational Analysis

- is a systematic *collection of tools* that an organization may use to analyze and understand both its *internal* and its *external* environments.
- It consists of SWOT analysis and Porter's five forces as well as 5Cs analysis.



The **5Cs** are: the company, its competitors, its customers, its collaborators, and the climate the company operates in.

- Company analysis covers the organization's goals and objectives, market position, performance related to its stated mission, and its product line.
- Competitor analysis looks at the positions of the organization's competition and the threats they may impose.
- Customer analysis encompasses an understanding of past, present, and future customers and their demographics.
- Collaborator analysis includes an understanding of agents, supplies, distributors, and business partners.
- The understanding of organization's climate includes understanding the political, regulatory, economic, social, cultural, and technological environments.

### **PEST Analysis**

involves an understanding of the organization's political, economic, social, and technological environments. Its focus is on the opportunities and threats in the organization's environment.

### **Scenario Planning** (also called scenario thinking or scenario analysis)

- is a strategic planning methodology designed to assist the organization in developing flexible strategic plans “what if” planning.
- It involves simulating or gaming the expected behavior of what are called STEEEPA trends. STEEEPA is an acronym for plausible alternative social, technical, economic, environmental, educational, political, and aesthetic trends.
- These are the key driving forces in the organization's environment. Again, the focus is on opportunities and threats and developing coping mechanisms.

### **Competitive Analysis** (commonly called competitor analysis)

- focuses on understanding one's competition.
- It includes knowing who the competition really is rather than who the organization thinks it is. It involves profiling competitors regarding history, products and services, financial condition, corporate and marketing strategies, facilities, and personnel.
  - It also encourages the organization to scan the environment for potential new customers.

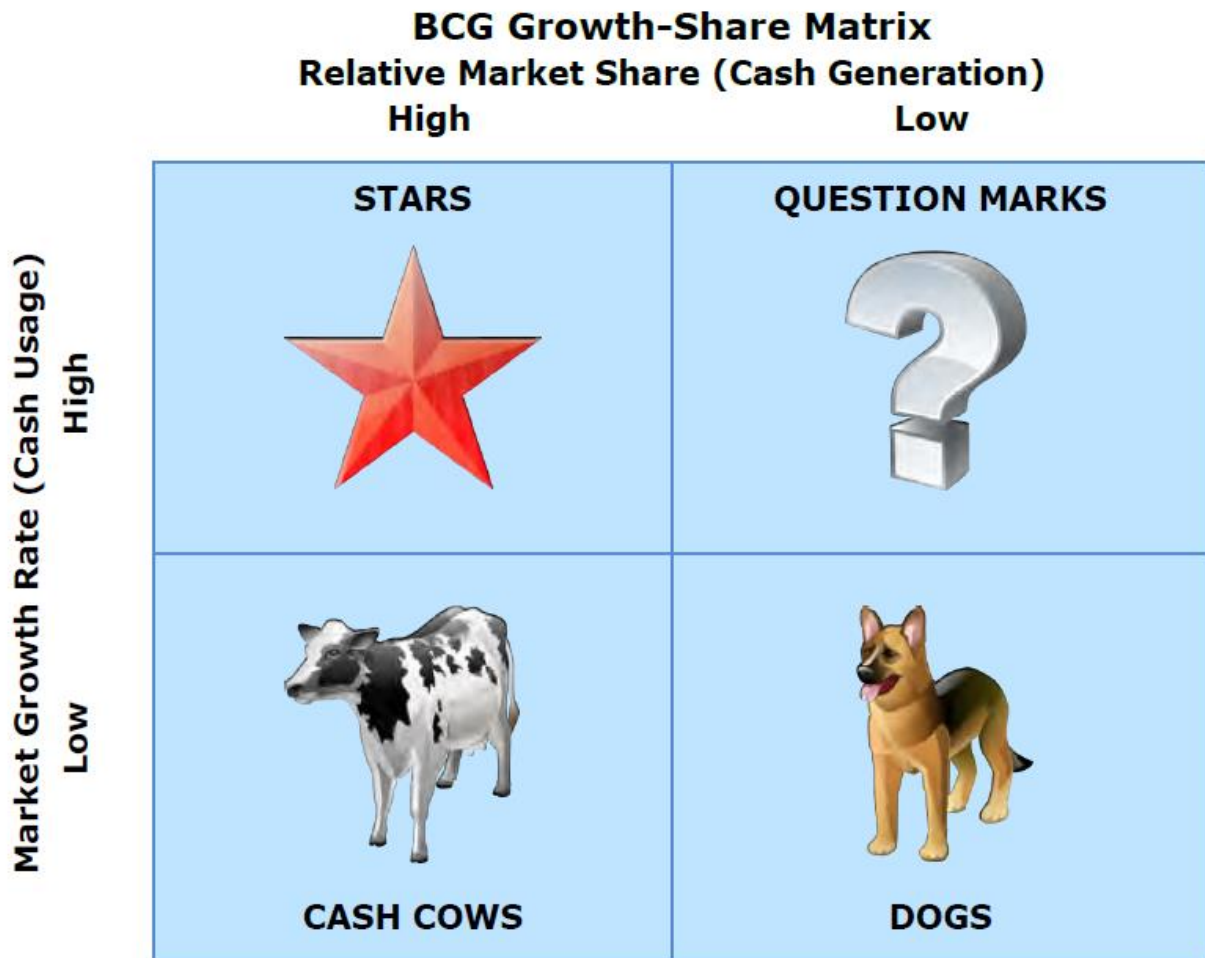
### **Contingency Planning** (also called continuity or sustainability planning or plan B)

- is a process that helps prepare an organization to respond effectively to unplanned events. Contingency plans are part of risk management. They are used to respond to exceptional relatively unlikely risks that if they occur could have catastrophic effects on the organization.
- Contingency planning is an approach that organizations often use in financial planning and analysis because it considers several alternative possibilities, specifically those concerning **external variables**.

### **The BCG Matrix**

The BCG (Boston Consulting Group) Growth Share Matrix looks at the company's products or services as one of the following: stars, cash cows, dogs, or question marks.

The BCG Growth-Share Matrix is a method of analyzing a *company's portfolio* of products to determine where each product is in its life cycle in order to make better decisions about allocation of resources in planning. Since a large firm may be viewed as a *portfolio* of investments in the form of strategic business units (SBUs), techniques of portfolio analysis have been developed to aid management in making decisions about resource allocation, new business startups and acquisitions, downsizing, and divestitures.



The BCG Matrix classifies products into four categories based on the growth of the markets they are in and their share of those markets.

**The annual MGR/Cash usage** (is stated in constant units of the currency used in the measurement).

- It reflects the maturity and attractiveness of the market and the relative **need for cash** to finance expansion.

**The RMS/Cash generation**

- reflects the SBU's competitive position in the market segment. It equals the SBU's absolute **market share** divided by that of its leading competitor.



### Stars (high RMS, high MGR)

A star is in an industry that has a high market growth rate, and the product has a high share of the market.

Stars are products or services with

- *High Relative Market Share* (high cash generation) capabilities.
- *High Market Growth Rates* (high cash usage) and

**Net cash flow (plus/minus) is modest.**

- **High Cash generation**
  - A star generates a lot of cash because it has a high share of its market.
- **High Cash usage**
  - Such an SBU is profitable but needs large amounts of cash for expansion, R&D, and meeting competitors' attacks.
  - However, because the market is growing rapidly, the star's sales are also growing rapidly. Rapidly-growing sales create a need for working capital to support the required increases in accounts receivable and inventory. As a result, a star has a high need for cash for investment.
- Therefore, **the net amount of cash a star generates is not great.**
  - If a star can maintain a high market share, the star will become a **cash cow** when the market's growth rate declines, generating more cash than it consumes. Stars are important because they ensure future cash generation.
  - The company may adjust the price of a star several times, decreasing it to claim market share and then increasing the price to maximize revenue as the product's market share and popularity grow.

### Question marks (low RMS, high MGR)

A **question mark** is a product in an industry with a high market growth rate, but the product has a low share of the market.

Question marks have

- *Low Relative Market Share* (low cash generation) capabilities and
- *High Market Growth Rates* (high cash usage) and

**Low cash generation & High cash usage**

- **High Cash Usage**
  - Because the market is growing rapidly, the question mark's sales are also growing rapidly, so it will **consume a lot of cash for investment**.
  - They need large amounts of cash not only to finance growth and compete in the market, but also to increase RMS since such product has a low share of the market.
- **Low Cash Generation**
  - However, because of its low market share, it does not generate much cash.

**If RMS increases significantly, a question mark may become a star and then eventually a cash cow.**

- A question mark has potential to gain market share and become a **star** and then eventually a **cash cow** when the growth rate of the market slows.

But for the present, a question mark is considered a "problem child" because its net cash generated is negative.



**If RMS not increases significantly, a question mark may become a dog.**

- If the question mark does not attain a greater share of its market, it will turn into a **dog** when the growth rate of the market declines.

**Additional Investment in question mark**

- A question mark may or may not be worthy of the additional investment that would be required to increase its market share. It needs careful analysis to determine whether or not to invest more money in it. Because a question mark needs to increase its market share quickly in order to avoid turning into a **dog**, pricing of a question mark should be aggressive.

**Cash cows (high RMS, low MGR)**

A cash cow is in an industry with a low market growth rate, but the product has a high share of the market.

- Cash cows are in mature markets in which the growth rate has slowed, but they are market leaders.
- The characteristics of a cash cow product do not change much, customers know what they are getting, and the price does not change much either.

Cash cows have

- *High Relative Market Share* (high cash generation) capabilities....but
- *Low Market Growth Rates* (low cash usage).

**High Cash generation**

- Cash cows generate more cash than they consume thus any company would be glad to have them.
- A cash cow ordinarily enjoys high profit margins and economies of scale.
- Financing for expansion is not needed, so the SBU's excess cash can be used for investments in other SBUs.

**Investment in a cash cow**

**Cash cow** should be "milked" to extract their profits *without investing* much cash in them.

- Investment in a cash cow would be **wasted** money because of the slow growth of the industry.
  - However, marketing and R&D expenses should not necessarily be slashed excessively.

**From cash cow to dog**

- Maximizing net cash inflow might precipitate a premature decline from cash cow to dog.

**Dogs (low RMS, low MGR)**

- A dog is in a mature industry with a low market growth rate, and it has a low share of the market. A dog does not consume much cash, but it does not generate much cash, either.

**Dogs have**

- *Low Relative Market Share* (low cash generation) capabilities and
- *Low Market Growth Rates* (low cash usage).

**Net cash flow (plus/minus) is modest.**

- Dogs usually barely breaking even.

**Investment in Dogs**

- The investment money tied up in it has little potential, and it depresses the company's Return on Assets.
- Dogs should be sold off, and pricing is not a major concern.



### Natural Life Cycle

The natural life cycle for a business unit or a product is that it begins as

1. **a question mark**, then turns into
2. **a star**, then when the market stops growing, it turns into
3. **a cash cow**. At the end of its life cycle, the cash cow turns into
4. **a dog**.

However, if the **question mark** never achieves **stardom**, it goes straight to **dogdom** when the market's growth rate slows.

### The Diversified balanced portfolio

- A diversified company with a balanced portfolio will have some stars, some question marks, and some cash cows. But a portfolio of SBUs **should not** have too many dogs and question marks or too few cash cows and stars.
  - The **stars**' high market share and high growth rate assure the future.
  - The **question marks** have potential to become stars if they receive the necessary investment.
  - The **cash cows** supply the cash to fund the future growth of the stars and the question marks.

### Investments in SBUs

#### Cash cows

- should not be **underfunded** because the risk is premature decline.
- However, **overfunding** cash cows means less investment in SBUs with greater growth prospects.

#### Dog

- A large investment in a dog with little likelihood of a turnaround is also a typical mistake.

#### Question Marks

- A firm should not have too many question marks. Results are excess risk and underfunded SBUs.

### Movement within the growth-share matrix and formulating appropriated strategy

Each SBU should have objectives, a strategy should be formulated to achieve those objectives, and a budget should be allocated.

- A **hold strategy** is used for strong cash cows.
- A **build strategy** is necessary for a question mark with the potential to be a star.
- A **harvest strategy** maximizes short-term net cash inflow.
  - Harvesting means zero-budgeting R&D, reducing marketing costs, not replacing facilities, etc. This strategy is used for weak cash cows and possibly question marks and dogs.
- A **divest strategy** is normally used for question marks and dogs that reduce the firm's profitability. The proceeds of sale or liquidation are then invested more favorably.
  - A harvest strategy may undermine a future divestiture by decreasing the fair value of the SBU.

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## How a Firm Succeeds: The Competitive Strategy

### Question

# How a Firm Succeeds?

### Answer

A firm succeeds by implementing a **strategy**, that is, a plan for using resources to achieve sustainable goals within a competitive environment.

Finding a strategy begins with determining the purpose and long-range direction, and therefore the *mission*, of the company.

Below exhibit lists excerpts from the mission statements of several companies.

#### Ford Motor Company (ford.com)

Provide personal mobility for people around the world.

#### IBM (ibm.com)

To lead in the creation, development, and manufacture of the industry's most advanced information technologies, and to translate these into value for our customers.

#### Google (google.com)

To organize the world's information and make it universally accessible and useful.

#### Walt Disney (disney.com)

To make people happy.

#### Sara Lee (saralee.com)

Simply delight you . . . every day.

The mission is developed into

*specific performance objectives*

which are then implemented by

*specific corporate strategies*

that is, *specific actions* to achieve the *objectives* that will fulfill the mission.

#### Sara Lee Corporate Strategy

The company is focused on building sustainable, profitable growth over the long term by achieving share leadership in its core categories:

- innovating around its core products and product categories;
- expanding into high opportunity geographic markets and strategic joint venture/partnerships;
- delivering superior quality and value to our customers; and
- driving operating efficiencies.

• **Focusing on innovation**, execution and performance. As a branded consumer goods company, we know successful new products are a key driver of Sara Lee's success.

• **Building big brands in big markets**. Sara Lee has a strong portfolio of big and growing brands that compete in large consumer markets around the world.

• **Fostering a new culture**. Living and breathing our values every day, our people around the world work as teams, act with integrity, are inclusive, use the imagination and, most important of all, have the passion to excel.

Note that Sara Lee's broad mission statement is explained in terms of more specific objectives, which are in turn operationalized through specific corporate strategies.

# Section C. Performance Management (20% - Levels A, B, and C)

## Content Specification Outlines

### Section C. Performance Management

- Section C.3. Performance measures
  - The Balanced Scorecard

Above CSOs cover below units in Gleim:

### STUDY UNIT EIGHT: ANALYSIS AND FORECASTING TECHNIQUES

- 8.1 Correlation and Regression
- 8.2 Learning Curve Analysis
- 8.3 Time Series Analysis
- 8.4 Expected Value
- 8.5 Sensitivity Analysis
- 8.6 Strategic Management
- 8.7 The Balanced Scorecard
- 8.8 Strategic Planning

## Levels of Controls in Managerial Accounting

### PERFORMANCE EVALUATION AND CONTROL

**Performance evaluation** is the process by which managers at all levels gain information about the performance of tasks within the firm and judge that performance against pre established criteria as set out in budgets, plans, and goals. Performance evaluation is applied for each of the three management functions: operations, marketing, and finance.

The essence of control is a comparison of actual performance to budgeted or expected performance.

#### Operational Control

The monitoring of **short-term** operating performance; takes place when mid-level managers monitor the activities of operating-level managers and employees.

Focuses on *detailed* short-term performance measures, has a **management-by-exception** approach; that is, it identifies units or individuals whose performance does not comply with expectations so that the problem can be promptly corrected.

#### Management by exception.

Practice of focusing management attention on areas not operating as expected and giving less attention to areas operating as expected.

Standard Costing and Variance Measures (unit 10)

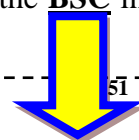
#### Management Control

The evaluation of mid-level managers by upper-level managers, is more consistent with the **management-by-objectives** approach, in which long-term objectives such as growth and profitability are determined and performance is periodically measured against these goals.

#### Management by Objectives (MBO)

MBO is a behavioral, communications-oriented, responsibility approach to management and employee self-direction. It is a comprehensive management approach and therefore is relevant to planning and control.

Responsibility Accounting and Performance Measures (Unit 11), Gleim cover the **BSC** in U.8





## Balanced Scorecard

### Definition

A framework for implementing strategy that translates an organization's mission and strategy into a set of performance measures. <sup>(H)<sup>2</sup></sup>

A process of compiling and organizing the key performance indicators (KPIs) of an organization into four segments:

- Financial,
- Customer,
- Internal Business Process, and
- Learning and growth.

KPIs are **measures** that drive the organization to achieve its goals. Each KPI can be measured in a specific way so that it can be managed appropriately.

### Benefits of Implementing the BSC

- Moving organizations away from concentrating solely on financial data, thus broadens management's attention to **short-run and long-run performance**.
  - does not focus solely on achieving **short-run** financial objectives.
- It also highlights the nonfinancial objectives that an organization must achieve to meet and **sustain** its financial objectives.
- In for-profit companies, the primary goal of the balanced scorecard is to sustain long-run financial performance. Nonfinancial measures simply serve as **leading indicators** for the hard-to-measure long-run financial performance.
- encourages managers to focus on elements that tend to lead to **long-term success** instead of on short-term financial performance by rewarding them for improvements in those elements that tend to lead to long-term success.
  - Evaluating and rewarding managers based on these non-financial indicators should lead to long-term financial performance improvements, if the proper non-financial indicators have been selected.

### Lagging vs. Leading indicators

#### Financial Measures

- Financial measures that focus on short-term financial performance are in fact **lagging** indicators of how the company is doing.

#### Non- Financial Measures

- Improvements in the non-financial measures provide the prospect of increased future economic value for shareholders. Nonfinancial measures focus on performance that should ultimately result in improved long-term financial performance. Thus nonfinancial measures are **leading** indicators of performance.

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<sup>2</sup> An **accounting report** that includes the firm's critical success factors in four areas: ...



**LOS in 2015 CMA Examination asking the candidates to:**

L. Define **key performance indicators (KPIs)**, and discuss the **importance** of these indicators in evaluating a firm.

- a. Key performance indicators (KPIs) are measures of factors **critical to the success** of the organization. Each KPI requires a defined business process, clear objectives for the process, quantitative or qualitative measurements for the objectives, and a plan for identifying and correcting variances from plan.

M. Define the concept of a **balanced scorecard** and identify its **components**.

- a. Balanced scorecard-A process of compiling and organizing the key performance indicators (KPIs) of an organization into four segments:

- a. **financial**,
- b. **customer**,
- c. **internal business process**, and
- d. **learning and growth**.

- Each KPI can be measured in a specific way so that it can be managed appropriately.

N. Identify and describe the **perspectives** of a BSC, including **financial** measures, **customer** satisfaction measures, internal **business** process measures, and innovation and **learning** measures<sup>3</sup>.

a. **Financial measures** - Cover the traditional financial ratios, such as return on equity, sales growth, return on assets, earnings per share, and the like.

b. **Customer satisfaction measures** - Focusing on the customer is critical to accomplishing goals as the customer drives all of a company's revenue. The primary customer outcome measures include market share, acquisition, satisfaction, retention, and profitability.

c. **Internal business process** measures - Go beyond simple financial variance measures to include output measures, such as quality, cycle time, yield, order fulfillment, production planning, throughput, and turnover.

d. **Innovation and learning** measures - Focus on becoming efficient and effective at producing new products. The measures include time to market, percentage of sales from new products, and new products versus competitor's new products. Learning and growth measures focus on education and training of personnel and can be measured by training sessions provided, developing leadership skills, and reducing the number of defects.

The metrics used fall into four broad categories of performance indicators, also known as **perspectives**. The perspectives are hierarchical, meaning that achievement of the objectives of each perspective supports achievement of the objectives of the perspective on the next level above it.

- Achievement of **learning and internal business process** objectives leads to achievement of **customer satisfaction** and **financial** measures objectives.<sup>.(HK)</sup>

<sup>3</sup> The Learning and Growth perspective (originally called the innovation and learning perspective) originally focused on employee learning, but it now covers not only human capital but also organizational capital and information capital. Initially innovation was part of this perspective, but users of the balanced scorecard system discovered that innovation properly belonged in the Internal Process category.<sup>.(HK)</sup>



**The perspectives and their content have changed since the first article written by Kaplan and Norton. The current perspectives are as follows.**

## **The Four Perspectives**

### **1) The Financial perspective**

- focuses on the organization's financial objectives and enables tracking of financial success and shareholder value.

By Evaluating

- the profitability of the strategy and
- the creation of shareholder value.

### **Common measures of financial performance are:**

- Operating income, sales revenue growth, revenue from new products, gross margin percentage, cost reductions, Residual Income, and Return on Investment, New Produce Sales, Price/Earnings Ratio, Quick Ratio, return on equity, earnings per share and accuracy of sales projections, stock prices, operating earnings, earnings trend, revenue growth, gross margin percentage, cost reductions, cash flow coverage and trends, turnover (assets, receivables, and inventory), and interest coverage.

### **Links to Financial Measures**

- Financial performance is a priority, but good long-term financial performance **will not be achieved** if goals in other **non-financial** categories are not attained.
- To drive future financial performance, the BSC requires assessment of other non-financial categories

### **2) The Customer perspective involves**

- This perspective identifies **targeted customer** and **market segments** and measures the company's success in these segments.

### **Market Share**

- measuring this success is the trend in the company's share of the market over time and the degree to which it increases in line with management goals.

### **Customer Satisfaction**

- if customers are not satisfied they will take their business elsewhere.
- meeting customer needs better than the competition or being known for high quality and excellent customer service.
- The number of repeat customers and the percentage of deliveries that are made as promised and when promised can measure the degree to which customers' needs are being met.
- Customer surveys can be used to measure the level of customer service provided after the sale.

### **Pricing**

- become the **lowest cost supplier**, in which case pricing goals will be part of the customer perspective.
  - Being the lowest cost supplier can be measured by the customer's total cost of using the company's product relative to the customer's total cost to use competitors' products.

**Quality**

- The number of defective products returned and the level of product reliability over time can measure achievement of quality goals.

**Common measures of Customer satisfaction**

- Focusing on the customer is critical to accomplishing goals as the customer drives all of a **company's revenue**.
- The primary customer outcome measures include market share, acquisition, satisfaction, retention, and profitability.

<u>CSF</u>	<u>Financial Measure</u>	<u>Nonfinancial Measure</u>
Customer Satisfaction	Trends in dollar amounts of returns	Market share
Dealer and Distributor Relationships	Trends in dollar amounts of discounts taken	Lead time
Marketing and Selling Performance	Trends in dollar amounts of sales	Market research results
Prompt Delivery	Trend in delivery expenses	On-time delivery rate
Quality	Dollar amount of defects	Rate of defects

1) **Other financial measures** may include dollar amount of sales, dollar amount of returns, and warranty expense.

2) **Other nonfinancial measures** may include unit sales, trends in unit sales, trend in market share, number of returns, rate of returns, customer retention rate, number of defects, number of warranty claims, rate of warranty claims, survey results, coverage and strength of distribution channels, training of marketing people, service response time, and service effectiveness,

**3) The Internal Process perspective (IBP)**

- includes innovations and improvements in products and services, operations, and customer service/support needed to create value for customers, which in turn furthers the Financial perspective.

How “Internal Business Process” (IBP) can help the company with below objectives?

**If one of the company’s customer goals is to be the lowest cost supplier**

- **IBP** should maintaining efficient, low-cost production,
  - which can be measured by metrics such as the cost of raw materials, the number of employee hours needed to manufacture a unit of product, and plant utilization. Efficient cycle times also keep costs low.

**If high quality is a customer satisfaction goal**

- the support for that objective will also be required within the **IBP** that create high quality, such as good manufacturing practices.

**Meeting customers’ needs better than the competition**

- is supported by innovations in products and services, which can be measured by the number of new product introductions.



**Technological capability for customer service personnel**

- is necessary to provide excellent customer service, and it is also needed in manufacturing in order to produce high quality products efficiently.

**Internal business process measures**

Go beyond simple financial variance measures to include output measures, such as quality, cycle time, yield, order fulfillment, production planning, throughput, and turnover.

<u>CSF</u>	<u>Financial Measure</u>	<u>Nonfinancial Measure</u>
Quality	Scrap costs	Rate of scrap and rework
Productivity	Change in company revenue/change in company costs	Units produced per machine hour
Flexibility of Response to Changing Conditions	Cost to re-purpose machine for new use	Time to repurpose machine for new use
Operating Readiness	Set-up costs	Downtime
Safety	Dollar amount of injury claims	Number of injury claims

1) **Other financial measures** may include such things as quality costs and level of inventory carrying costs.

2) **Other nonfinancial measures** may include new products marketed, technological capabilities, survey results, field service reports, vendor defect rate, cycle time, labor and machine efficiency, setup time, scheduling effectiveness, capacity usage, maintenance, and accidents and their results.

#### 4) **The Learning and Growth perspective** (originally called the innovation and learning perspective)<sup>4</sup>

The Learning and Growth perspective includes the capabilities that the organization must have in order to achieve its objectives in the **IBP** perspective.

**Components of the Learning and Growth perspective (3 C's)**

- **Human capital**, or the skills, talents, and knowledge of employees;
- **Information capital**, or the information systems, networks, and technology infrastructure of the company; and
- **Organizational capital**, or the company's culture, leadership, degree of teamwork, and knowledge management.

**Innovation and learning measures**

Focus on becoming efficient and effective at producing new products. The measures include time to market, percentage of sales from new products, and new products versus competitor's new products.

**Learning and growth measures**

Focus on education and training of personnel and can be measured by training sessions provided, developing leadership skills, and reducing the number of defects.

<sup>4</sup> Originally focused on **employee learning**, but it now covers not only human capital but also **organizational capital and information capital**. Initially innovation was part of this perspective, but users of the balanced scorecard system discovered that innovation properly belonged in the Internal Process category.

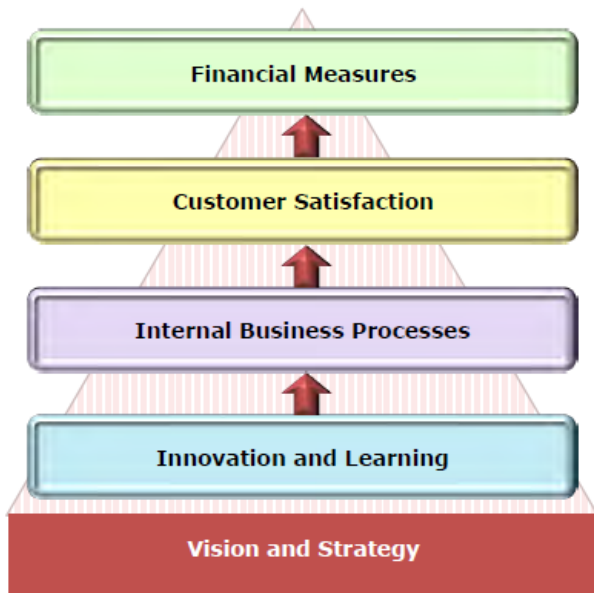


CSF	Financial Measure	Nonfinancial Measure
Development of Products	New R&D costs	Number of new patents applied for
Promptness of Their Introduction	Lost revenue (from slow introduction of new product to market)	Length of time to bring a product to market
Human Resource Development	Recruiting costs	Personnel turnover
Morale	Orientation/team-building costs	Personnel complaints
Competence of Work Force	Training/retraining costs	Hours of training

1) **Other financial measures** may include financial and operating results.

2) **Other nonfinancial measures** may include number of design changes and copyrights registered, R&D personnel qualifications, actual versus planned shipping dates, skill set levels attained, personnel survey results, organizational learning, and industry leadership.

### The Hierarchical Four broad categories of performance indicators/ perspectives.



In order for the balanced scorecard to be useful, the organization must be able to identify a cause-and-effect relationship between an action that could be taken (or avoided), that will have an effect on a CSF.

- For example: If the organization increases its R&D budget, then the organization can increase the number of new patents applied for.
- Achievement of the objectives in each perspective makes it possible to achieve the objectives in the next higher perspective.
- This chaining of objectives and perspectives embodies the implementation of a **strategy map**.

### Key Performance Indicators for a Balanced Scorecard<sup>5</sup>

- KPIs are measures of factors *critical to the success* of the organization.
- SWOT analysis helps a company determine its key performance indicators (KPIs).
- KPIs are specific, measurable goals that must be met in order to achieve a firm's strategy.
- 

<sup>5</sup> CSFs are the cause of your success, whereas KPIs are the effects of your actions, some people use them interchangeably. The ICMA stop using the term CSFs and replace point “m” with a new one “l” ~~m. define critical success factors and discuss the importance of these factors in evaluating a firm~~ l. define key performance indicators (KPIs) and discuss the importance of these indicators in evaluating a firm.



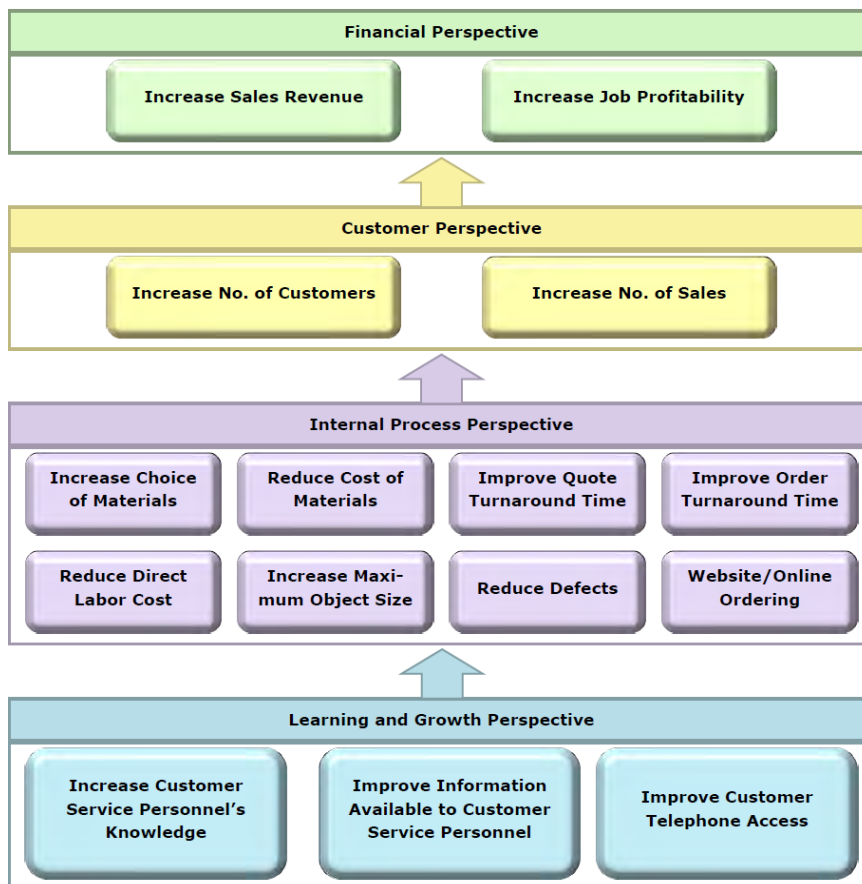
- Each KPI requires a defined business process, clear objectives for the process, quantitative or qualitative measurements for the objectives, and a plan for identifying and correcting variances from plan.
- KPIs should represent what is essential to the company competitive advantage and therefore its success.
  - To emphasize the importance of using strategic information, both financial and Non-financial, accounting reports of a firm's performance are now often based on **critical successes factors** in the above four different dimensions.
- Once the firm has identified its CSFs, it must establish specific, measurable ways for each CSF that are both relevant to the success of the firm and reliably stated.
- business should select a few critical metrics (KPIs)
  - KPIs should fit within an overall **cause-and-effect relationship** chain that ends with a relevant financial measure and the achievement of part of the company's strategy.

### Functionality of the BSC/ implementation of a Strategy Map

For the cause-and-effect chains of KPIs to be useful, they must be linked to a *definite outcome and a performance driver* that says how the outcome can be met

To achieve its objectives, the organization must establish the following:

- 1) Relevant criteria to measure **outcomes**. -This requires the use of **lagging** indicators which measure the results of actions.
  - a. Outcome measures are **lagging indicators**, or historic indicators of success such as measures of profitability, market share, employee skills, or customer retention.
- 2) Relevant performance **drivers** - This requires the use of **leading** indicators which are used to determine how an outcome can be met.



### Strategy Map

A strategy map **links** these four balanced scorecard perspectives together, beginning with Learning and Growth.

The goals of the **Learning** and Growth perspective contribute to the **Internal Process** perspective because the company's culture of empowering staff members and providing them with the technological support they need makes innovation and improvements in products and services possible. The **innovations** and improvements in products and services support the goals of the **Customer** perspective, such as increasing market share. Increased market share leads to increased **profits**, thereby supporting the goals of the **Financial** perspective.



In a business where customer service is critical, important measurements to track include telephone wait time, the level of knowledge and empowerment of customer service personnel, and the availability to customer service personnel of needed information. For example, a company that provides 3D printing (additive manufacturing) services using 3D design files prepared and uploaded by the customer to its website needs service personnel knowledgeable enough to provide technical advice to customers in order to achieve satisfactory results; it needs adequate numbers of customer service representatives; and it must have sufficient telephone lines to keep customers' wait times to a minimum.

**Example:** A Balanced Scorecard report for a company offering 3D printing service to customers who prepare and submit their design files created using 3D design software. The company has been serving the local market, and its strategic plan calls for expansion into the online market, serving customers around the world.

Objectives	KPI	Initiatives	Target	Results
<b>Financial Perspective:</b>				
Increase sales revenue	Rate of growth	Enter online market	20% increase	25% increase
Increase job profitability	Gross margin increase	Decr. DM & DL cost	Incr. gross margin from 40% to 45%	Gross margin incr. to 41%
<b>Customer Perspective:</b>				
Increase no. of customers	% increase	Employ search engine marketing service	10% increase	20% increase
Increase no. of sales	% increase in no. of quote requests that become orders	Speed up quoting process	5% increase	10% increase
<b>Internal Process Perspective:</b>				
Increase customer's choice of materials	No. of unique materials available	Add stainless steel and titanium	Increase from 15 to 17	Stainless steel, titanium and bronze added
Reduce cost of materials	Cost per unit	Seek new suppliers	Reduce by 5%	Reduced by 2%
Improve quote turnaround time	Average time/quote	Purchase new software	Decrease from 24 hours to 12 hours	Average time 15 hours
Improve order turnaround time	Average processing time/order	Purchase new, faster 3D printers	Decrease from 48 hours to 24 hours	Average turn-around 20 hrs.
Reduce direct labor cost	Avg. DL cost as a % of order price	New equipment will need fewer operators	Decrease from 30% to 20%	Decreased to 28%
Increase size of objects that can be manufactured	Maximum size	New equipment will have larger capacity	Increase from 24 cu. in. to 48 cu.in.	Maximum size incr. to 48 cu. in.
Reduce defects	Rate of returns	Institute new quality control program	Decrease from 5% to 2%	Increased to 7%
Develop website for receiving online orders	% of total orders received online	Contract with web-site developer	Online orders 25% of all orders	Online orders 20% of all orders
<b>Learning and Growth Perspective:</b>				
Increase customer svc. personnel's knowledge of 3D design software	No. of calls referred to supervisor	Training for customer service personnel	20% fewer calls referred	15% fewer calls referred
Improve customer information available	Average time spent on calls by customer service personnel	Purchase new Customer Relationship Management software	Reduce average time by 5%	Average call time reduced by 6%
Improve customer telephone access	Average wait time to reach customer service personnel	Add 3 new telephone lines and 2 new customer svc. employees	Reduce average wait time by 3 minutes	Average wait time reduced by 4 minutes

**Financial:** The increase in sales growth was achieved. The increase in gross profit margin was not achieved, though the gross profit margin was improved slightly.

**Customer:** Both targets were achieved.

**Internal Process:** Increased choice of materials, improved order turnaround time, and increased size of manufactured objects targets were achieved. Reduction in cost of materials, improvement in quote turnaround time, reduction in direct labor cost, and percentage of online orders to total orders were improved, though the targets were not achieved. The objective of reducing defects was definitely not achieved, as the defect rate increased.

**Learning and Growth:** Reduction of average time spent on calls by customer service personnel and average wait time to reach customer service personnel targets were achieved. Reduction in number of calls referred to supervisor was not achieved, though the percentage of calls referred to a supervisor did decline.



### Implementing a Balanced Scorecard

Implementing the balanced scorecard basically involves executing strategy. Without execution, even the best vision remains a dream. The balanced scorecard lends itself well to strategy execution, because the scorecard itself is a method of describing strategy in a way that can be acted on.

### The characteristics of Successful Implementation of BSC (Different Business Strategies call for Different Scorecards)

A BSC is most successful **when**

- the entire organization is aware of it and supports it.
- senior management support the program, even as high as the board of directors.
- It is tied to the organization's strategy and goals, and the performance measures can be quantified.
- It illustrating the sequence of cause-and-effect relationships
- Each business unit and division should be involved in developing its own customized scorecard.
  - When scorecards as developed by middle managers need to be reviewed and approved with input from senior management to make sure they are congruent with the company's goals.
- It is organized according to the four perspectives, with each selected scorecard measure on a line and classified within its perspective.
  - The target can be in one column followed by the actual results in the next column. Results that are in line and out of line can be identified, perhaps by color.
  - Each manager should be accountable for specific lines on each report, and a division head is accountable for all the lines on the divisional report.
- It identify tradeoffs that managers might make, for instance by reducing R&D spending to achieve short-run financial goals, or making other tradeoffs that could hurt future financial performance.
  - The decline of R&D spending or other problems would be signaled.
- It is marketed to both management and staff to garner support.
- Scorecard evaluation is more effective when it is used to judge the progress of an individual business unit relative to the prior year or relative to its goals rather than when used to compare a manager's performance with that of other managers or a segment's performance with that of other segments.
- a firm have extensive **enterprise resource planning**<sup>6</sup> systems to capture the required information.
- used to create an environment in which everyone can learn and grow.

### Problems With Balanced Scorecard Use for Performance Measurement

**The following are problems in implementation of the balanced scorecard approach:**

- 1) Using **too many measures**, with a consequent loss of focus on CSFs
- 2) Failing to evaluate **personnel** on nonfinancial as well as financial measures
- 3) Including measures that will **not** have long-term financial benefits
- 4) Not understanding that **subjective** measures (such as customer satisfaction) are imprecise
- 5) Trying to achieve improvements in **all areas** at all times
- 6) Not being aware that the hypothesized **connection** between nonfinancial measures and ultimate financial success may not continue to be true

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<sup>6</sup> Enterprise resource planning (ERP) is a usually a suite of integrated business software applications that a company can use to collect, store, manage and interpret data from multiple business activities.(2015 LOS)





Section  
B.2

# Budgeting Concepts

2015

## Content Specification Outlines

### Part 1 – Section B.2.

#### 2. Budgeting concepts

- a. Operations and performance goals
- b. Characteristics of a successful budget process
- c. Resource allocation
- d. Other budgeting concepts

### Learning Outcome Statements

#### Part 1 – Section B.2. Budgeting concepts

The candidate should be able to:

- a. describe the role that budgeting plays in the overall **planning** and **performance evaluation** process of an organization
- b. explain the interrelationships between economic conditions, industry situation, and a firm's plans and budgets
- c. identify the role that budgeting plays in formulating short-term objectives and planning and controlling operations to meet those objectives
- d. demonstrate an understanding of the role that budgets play in measuring performance against established goals
- e. identify the **characteristics** that define **successful budgeting processes**
- f. explain how the budgeting process facilitates **communication** among organizational units and enhances **coordination** of organizational activities
- g. describe the concept of a **controllable cost** as it relates to both budgeting and performance evaluation
- h. explain how the **efficient allocation of organizational resources** are planned during the budgeting process
- i. identify the appropriate **time frame** for various types of budgets
- j. identify who should **participate** in the budgeting process for optimum success
- k. describe the **role of top management** in successful budgeting
- l. identify **best practice guidelines** for the **budget process**
- m. demonstrate an understanding of the use of **cost standards** in budgeting
- n. differentiate between **ideal** (theoretical) standards and **currently attainable** (practical) standards
- o. differentiate between **authoritative** standards and **participative** standards
- p. identify the **steps to be taken in developing standards** for both direct material and direct labor
- q. demonstrate an understanding of the **techniques** that are used to develop standards such as activity analysis and the use of historical data
- r. discuss the importance of a policy that allows **budget revisions** that accommodate the impact of significant changes in budget assumptions
- s. explain the role of budgets in **monitoring and controlling expenditures** to meet strategic objectives
- t. define **budgetary slack** and discuss its impact on goal congruence

Last updated 25/Aug/2014





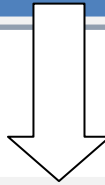
... *BusinessWeek*, *Forbes*, *Fortune*, and other business journals repeatedly have ranked Johnson & Johnson (J&J) as one of the most innovative, well-managed, and admired firms in the world.

***How does Johnson & Johnson do it?***

It relies on a comprehensive formal planning, **budgeting**, and control system in formulating and implementing strategy, coordinating and monitoring operations, and reviewing and evaluating performance.

Every January, each operating unit reviews and revises its 5- and 10-year plans from the previous year and prepares the budget for the coming year as well as a two-year plan. The budgeting process is not completed until the approval of the profit plan in December.

Johnson & Johnson is not unique. Growth and long-term profitability are results of a well formulated strategy with good planning and implementation of the strategy. Firms need to plan for success. (B)



Budgeting is a common tool that organizations use for planning and controlling what they must do to serve their customers and succeed in the marketplace. This chapter discusses the budgeting processes and techniques that many successful companies such as J&J use as part of its overall management processes.(B)



## Fundamentals: Terminology, Budget Cycle, and Advantages of Budgeting

The following budget terms are used in this section.

### Budget

A budget is (a) the quantitative expression of a proposed plan of action by management for a specified period and (b) an aid to coordinate what needs to be done to implement that plan. <sup>(H)</sup>

A budget generally includes both financial and nonfinancial aspects (measures) of the plan into its output, and it serves as a blueprint for the company to follow in an upcoming period. <sup>(H)</sup>

A budget is a detailed (*realistic*) plan for the acquisition and use of financial and other resources over a specified period of time—typically a fiscal year. <sup>(B)</sup>

A detailed plan for the future, usually expressed in formal quantitative terms. <sup>(G)</sup>

A budget is an operational plan and a control tool for an entity that identifies the resources and commitments needed to satisfy the entity's goals over a period. Budgets are primarily quantitative, not qualitative. They set specific goals for income, cash flows, and financial position. <sup>(IMA)</sup>

### Budgeting Or targeting: is the process of preparing a budget

Budgeting is undertaking the steps involved in preparing a budget. Along with clear communication of organizational goals, the ideal budget also contains budgetary controls. <sup>(IMA)</sup>

Budgeting is the most commonly used tool for planning and control. <sup>(H)</sup>

### Budgetary Control

Budgetary control is a management process to help ensure that a budget is achieved by instituting a systematic budget approval process, by coordinating the efforts of all involved parties and operations, and by analyzing variances from the plan and providing appropriate feedback to responsible parties. <sup>(IMA)</sup>

The goals identified in the budget must be perceived by employees as *realistic* if those employees are to be motivated to achieve the goals. <sup>(IMA)</sup>

### Pro forma Statements

A pro forma statement is a budgeted financial statement based on historical documents that is adjusted for events "*as if*" they had occurred. Budgeted balance sheets, budgeted statements of cash flows, and budgeted income statements are forecasts of goals for a future period that assist in the allocation of resources. <sup>(IMA)</sup>



### Take a Note:

A **projected financial statement** can be called a **pro forma financial statement**; however, the **master budget is not a pro forma financial statement**.

The term pro forma is used to refer to a **forecasted financial statement** prepared for a specific purpose (for example, to do “*what if*” analysis in the process of planning).

A company might prepare many different sets of pro forma financial statements for the same period in its planning process. A pro forma financial statement is **not used for formal variance reporting** as the master budget and the flexible budget are. However, if an action that was forecasted is implemented, the company would probably want to compare the actual results with the forecasted, pro forma ones. But **pro forma financial statements are not a part of the formal budgeting process**. They are used for planning and decision-making purposes, and the amounts in them may be quite different from the amounts in the master budget. (Planning and the use of pro forma financial statements is discussed more in the topic of Top-Level Planning and Analysis in this section.) (HK)

### Strategic plan and Strategic budgeting

An organization must complete its strategic plan before any specific budgeting can begin. The strategic plan lays out the means by which a firm expects to fulfill its stated mission.

**Strategic budgeting** is a form of long-range planning based on identifying and specifying organizational goals and objectives. The strengths and weaknesses of the organization are evaluated and risk levels are assessed. The influences of environmental factors are forecast to derive the best strategy for reaching the organization’s objectives.



## Budgeting Cycle and Master Budget

Well-managed companies usually cycle through the following budgeting steps during the course of the fiscal year:

### 1-Plan the performance of the company, Create master budget and subbudgets

Working together, managers and management accountants plan the performance of the company as a whole and the performance of its subunits (such as departments or divisions). Taking into account past performance and anticipated changes in the future, managers at all levels reach a common understanding on what is expected.<sup>(H)</sup>

### 2- Set a frame of reference and get manager buy-in, budget is used to test current performance against expectations.

Senior managers give subordinate managers a frame of reference, a set of specific financial or nonfinancial expectations against which actual results will be compared. , i.e., the budget is used to test current performance against expectations. <sup>(H)</sup>

### 3-Variations from the plan are examined, and corrective actions are taken

Management accountants help managers investigate variations from plans, such as an unexpected decline in sales. If necessary, corrective action follows, such as a reduction in price to boost sales or cutting of costs to maintain profitability.<sup>(H)</sup>

### 4- Planning again, in light of feedback and changed conditions when possible.

Managers and management accountants take into account market feedback, changed conditions, and their own experiences as they begin to make plans for the next period.

For example, a decline in sales may cause managers to make changes in product features for the next period.<sup>(H)</sup>

Feedback is collected, and the plan is revisited and revised if needed.<sup>(IMA)</sup>

The preceding four steps describe the ongoing budget process.

The working document at the core of this process is called the **master budget**.

The master budget expresses management's operating and financial plans for a specified period (usually a fiscal year), and it includes a set of budgeted financial statements. <sup>(H)</sup>

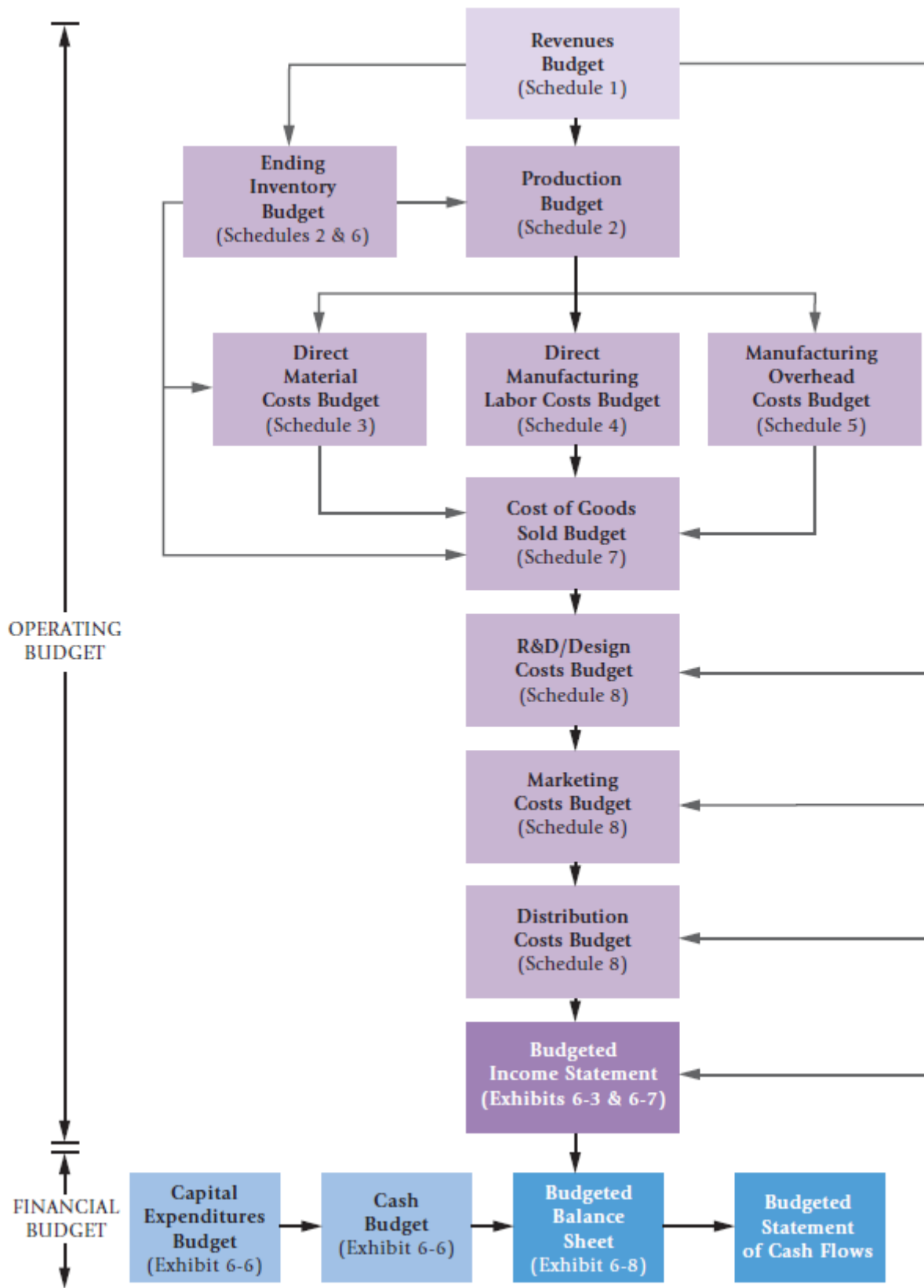
The master budget is the initial plan of what the company intends to accomplish in the budget period. The master budget evolves from both operating and financing decisions made by managers.<sup>(H)</sup>

Operating decisions deal with how to best use the limited resources of an organization.

Financing decisions deal with how to obtain the funds to acquire those resources.



## Overview of the Master Budget





Master budget is a **comprehensive budget** for a specific period. It consists of a capital budget and a set of interrelated operating and financial budgets. As noted earlier, the capital budget includes budgets to support strategic initiatives, programs, and projects.<sup>(B)</sup>

A **financial budget** quantifies management's expectations regarding income, cash flows, and financial position. Just as financial statements are prepared for past periods, financial statements can be prepared for future periods—for example, a budgeted income statement, a budgeted statement of cash flows, and a budgeted balance sheet. <sup>(H)</sup>

Underlying these financial budgets are **nonfinancial budgets** for, say, units manufactured or sold, number of employees, and number of new products being introduced to the marketplace.<sup>(H)</sup>

### **Interrelationships in the Master Budget**

Previous Exhibit shows a diagram of the various parts of the master budget for a manufacturer firm. Most of what you see in the Exhibit comprises a set of budgets the budgeted income statement and its supporting budget schedules - together called the **operating budget**. <sup>(H)</sup>

These schedules are budgets for various business functions of the value chain, from research and development to customer service.

The **financial budget** is that part of the master budget made up of the capital expenditures budget, the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows. A **financial budget** focuses on how operations and planned capital outlays affect cash. <sup>(H)</sup>

The master budget is finalized only after several rounds of discussions between top management and managers responsible for various business functions of the value chain. <sup>(H)</sup>

### **Take a Note:**

As you see the master budget consists of a number of separate but interdependent budgets that formally lay out the company's sales, production, and financial goals. The master budget culminates in a cash budget, a budgeted income statement, and a budgeted balance sheet. <sup>(G)</sup>

The **first step** in the budgeting process is the preparation of the **sales budget**, which is a detailed schedule showing the expected sales for the budget period. An accurate sales budget is the key to the entire budgeting process. As illustrated in the Exhibit, **all other parts of the master budget depend on the sales budget**. If the sales budget is inaccurate, the rest of the budget will be inaccurate. The sales budget is based on the company's sales forecast, which may require the use of sophisticated mathematical models and statistical tools. <sup>(G)</sup>

The sales budget helps determine how many units need to be **produced**. Thus, the production budget is prepared after the sales budget. The production budget in turn is used to determine the budgets for manufacturing costs including the direct materials budget, the direct labor budget, and the manufacturing overhead budget. These budgets are then combined with data from the sales budget and the selling and administrative expense budget to determine the cash budget. A cash budget is a detailed plan showing how cash resources will be acquired and used. Observe from the Exhibit that all of the operating budgets have an impact on the cash budget. <sup>(G)</sup>





## Advantages of Budget

A budget forces **managers to look ahead**, to translate strategy into plans, to **coordinate** and **communicate** within the organization, and to provide a benchmark for **evaluating** performance. <sup>(H)</sup>

Budgeting often plays a major role in affecting **behavior** and decisions because managers strive to meet budget targets. <sup>(H)</sup>

Budgets play a crucial role in businesses. Without budgets, it's difficult for managers and their employees to know whether they're on target for their growth and spending goals. Budgeting is a common accounting tool that companies use for implementing strategy.

Why does a successful company feel the need to watch its spending so closely? In many profitable companies, a strict budget is actually a key to their success. Through budgeting, managers learn to anticipate and avoid potential problems. <sup>(H)</sup>

Budgets turn managers' perspectives forward and aid in **planning** and **controlling** the actions managers must undertake to satisfy their customers and succeed in the marketplace. Budgets provide measures of the financial results a company expects from its planned activities and help define objectives and timelines against which progress can be measured. <sup>(H)</sup>

Budgets are a big part of most management control systems. When administered wisely, a budget becomes a **planning** tool, a **control** tool, a **motivational** tool, and a **communication** tool.



As **planning** tool budget forces the organization to examine the future.



Budgets promote **coordination** and **communication** among organization units and activities



As a **control** tool budget provide a framework for measuring performance



Provide **motivation** for managers and employees to achieve the company's plans



Promotes the efficient **allocation** of organizational resources



### As planning tool budget forces the organization to examine the future.

One of the major benefits of budgeting is that it **forces the organization to examine the future**. Expectations must be established for income, expenses, personnel needs, future growth (or contraction), etc. (IMA)

Planning allows for the input of ideas from multiple sources within the organization, and allows for input from **different viewpoints**. The planning process may generate **new ideas** for the organization's direction, or it may provide insight into **better ways to achieve goals** that have already been established. (IMA)

The budget process provides a **framework to achieve the goals** of the organization. Without the framework of a budget, individual managers would be improvising decisions without the direction and coordination provided by a budget. Without a budget, the organization would be operating in a reactive manner, rather than in a **proactive** manner. (IMA)

Budget preparations allow management time to **work out any problems** the organization might face in the coming periods. This extra time enables the organization to **minimize the adverse effects** that anticipated problems could have on operations. (B)

Budgets force managers to **think about and plan for the future**. In the absence of the necessity to prepare a budget, many managers would spend all of their time dealing with day-to-day emergencies. (G)

### Budgets promote coordination and communication among organization units and activities

**Coordination** is meshing and balancing all aspects of production or service and all departments in a company in the best way for the company to meet its goals. (H)

**Communication** is making sure those goals are understood by all employees. (H)

Management uses budgets to **communicate** directions and goals throughout a company. Completion of a budget for all units of an organization facilitates the **coordination** of activities across departments and other organizational units. (B)

#### Example:

For example, when the sales manager shares sales projections with the production manager, the production manager can plan and budget to produce the inventory that is to be sold. And the sales manager can make better forecasts of future sales by coordinating and communicating with branch managers, who may be closer to the customers and know what they want. (HK)

#### Communication

A budget also serves as a **communication** device through which **top management defines its plans** and goals for the period so that other **managers and employees have access to this information**. The operating plan of a budget allows each division to know what it needs to do to satisfy the needs of other divisions.

The different parts of the organization (production, marketing, materials management, etc.) must communicate their plans and needs to each other during the budget process so that all can evaluate the effect that the plans and needs of others have on their own plans and needs. (IMA)



Budgeting also allows the organization to communicate its goals to everyone in the organization, including those not involved in the budget process. Budgeting sets the stage for everyone in the organization to work toward the goals of the organization. (IMA)

### Example:

The manufacturing division knows, for example, that it needs to complete the production of so many units of a given product before a certain date if the marketing division schedules the delivery of that product to customers for various dates. (B)

### Coordination

Each part of the organization must **coordinate** its activities to attain the budgeted goals and objectives. (IMA)

### Example:

If new products are to be developed, funds must be provided for development, materials will have to be purchased to produce the products, marketing and sales must have sufficient resources to promote and sell the products, and shipping and distribution may need additional space to store the products or additional resources to distribute them. (IMA)

**Coordination** forces executives to think of relationships among individual departments within the company, as well as between the company and its supply chain partners. (H)

### Example:

Consider budgeting at Pace, a United Kingdom-based manufacturer of electronic products. A key product is Pace's digital set-top box for decoding satellite broadcasts.

The **production manager** can **achieve more timely production** by coordinating and communicating with the company's **marketing** team to understand when set-top boxes will be needed.

In turn, the **marketing** team can make better predictions of future demand for set-top boxes by coordinating and communicating with Pace's **customers**.

Suppose BSkyB, one of Pace's largest **customers**, is planning to launch a new high definition personal video recorder service. If Pace's **marketing** group is able to obtain information about the launch date for the service, it can share this information with Pace's **manufacturing** group. The **manufacturing** group must then coordinate and communicate with Pace's **materials-procurement** group, and so on.

The point to understand is that Pace is more likely to have **satisfied customers** (by having personal video recorders in the demanded quantities at the times demanded) if Pace coordinates and communicates both within its business functions and with its **suppliers** and **customers** during the budgeting process as well as during the **production** process. (H)

A budget promotes **goal congruence** and **coordination** among operating units, budgets requires departmental managers to make plans in conjunction with the plans of other interdependent departments, If the firm does not have an overall budget, each department tends to pursue its own objectives without regard to what is good for the firm as a whole.



### Example:

The sales department may want to keep as much inventory as possible so that no sales will be lost, but inventory control may be judged on its turnover rate. If the budget specifies the level of inventory, the two departments have a common framework for decision making and are no longer working at cross purposes. (GL)

### As a control tool budget provide a framework for measuring performance and provide a means for controlling operations (reporting variances between actual and budgeted spending)

Budgets prescribe what performance the organization expects of all divisions and all employees for the period. (B)

The budget provides a formal **benchmark** to be used for feedback and performance evaluation.

At the **end of an operating period**, the budget for the period can serve as a basis for assessing performance by reporting **variances** between actual and budgeted spending and operating results. The budget represents the specific results expected of the firm's divisions and employees for the period against which actual performance can be **compared**. (B).

By **comparing** actual results to the budget for a given period, a manager's performance can be evaluated. (IMA)

### Take a note:

Having **negative or unfavorable** results **does not necessarily** mean that a manager is not performing well, but it does provide an indication that a specific part of the business should be focused on, in order to determine the **root cause of the unfavorable variance**. (IMA)

Likewise, **positive, or favorable**, results **do not necessarily** mean that a manager is performing in an exceptional way. (IMA)

### Question

Why budgeted performance is a better criterion than past performance for judging managers?

### Answer

Because

- inefficiencies included in past results can be detected and eliminated in budgeting, as past results often incorporate past miscues and substandard performance. (H)
  - Last year's results may have been negatively impacted by poor performance and the causes may have now been corrected. In this case, using last year's results would set the bar too low.
- Future conditions may be expected to differ from the past, and these can also be factored into budgets. (H)
  - as the past is never a good predictor of the future, and the profit plan should reflect the conditions anticipated for the coming period, not the conditions that existed in the past period or periods. (HK)

**Monitoring: Provide a means to check on progress toward the organization's objectives.**

By comparing the actual results for a period to the budgeted results for that period, managers can see whether the organization is on track to achieving its goals. (IMA)



Question

Why performance should not be compared against the current budget **only**?

Answer

Because

- that can result in lower-level managers setting budgets that are **too easy** to achieve (i.e., it creates an incentive for subordinates to set a target that is relatively easy to achieve) <sup>(H)</sup>.
- It is also important to measure performance relative to the performance of the industry and even relative to performance in prior years.<sup>(HK)</sup>, many companies consider performance relative to **peers** as well as improvement over prior years <sup>(H)</sup>.

Once the budget is set and **managers** have been advised of their **responsibilities** in relation to budget performance, they can be held responsible for their portion of the budget. Breaking down the organization's master budget to divisional and departmental levels allows each level of the organization to be evaluated. The organization as a whole may be meeting its goals, while individual divisions and departments are failing. <sup>(IMA)</sup>

Question

How the budgetary process serve effectively as a control function?

Answer

For the budgetary process to serve effectively as a control function, it must be integrated with the accounting system and the organizational structure. Such integration enhances control by transmitting data and assigning variances to the proper organizational subunits.<sup>(GL)</sup>

In order to do that, the responsibility centers used for budgeting need to be the same as the responsibility centers used for accounting; the chart of accounts used for budgeting need to be the same as the chart of accounts used for accounting; and so forth. This enables management to compare the budget with the actual levels of activity, revenues and expenditures and calculate variances.<sup>(HK)</sup>

Question

How the budgetary control process improve future performance?

Answer

One of the most valuable benefits of budgeting is that it helps managers gather relevant information for improving future performance. When actual outcomes fall short of budgeted or planned results, it prompts thoughtful senior managers to ask questions about what happened and why, and how this knowledge can be used to ensure that such shortfalls do not occur again. This probing and learning is one of the most important reasons why budgeting helps improve performance.<sup>(H)</sup>

**Provide motivation for managers and employees to achieve the company's plans****Question**

How the company use the budget process to improve motivation?

**Answer**

- Setting expected activities and operating results **clearly** in the budget, employees will know what is expected of them; in turn motivates employees to work to attain the budgeted goals.<sup>(B)</sup>
- Allow employees to **participate** in the budgeting process, thus helping employees embrace the budget as their own.<sup>(B)</sup>
- Set **demanding but achievable goals** for managers.<sup>(H)</sup>
  - Research shows that challenging budgets improve employee performance because employees view falling short of budgeted numbers as a failure. Most employees are motivated to work more intensely to **avoid failure** than to achieve success. As employees get closer to a goal, they work harder to achieve it. Therefore, many executives like to set demanding but achievable goals for their subordinate managers and employees.<sup>(H)</sup>
  - Challenging budgets improve employee performance, because no one wants to fail, and falling short of the budgeted numbers is perceived as failure, a budget helps to motivate employees to do a good job.<sup>(HK)</sup>
  - If they are so high that they are impossible to achieve, however, they are de-motivating.
- Performance evaluations allow an organization to motivate employees by **rewarding** them for **good performance** in a number of ways, such as through performance-based bonuses, and/or by including performance evaluations in the decision process for future compensation or promotion decisions.<sup>(IMA)</sup>

**Question**

How challenging should budget targets be??

**Answer**

Some experts argue that budget targets should be very challenging and should require managers to stretch to meet goals. Even the most capable managers may have to scramble to meet such a “stretch budget” and they may not always succeed. In practice, most companies set their budget targets at a “highly achievable” level. A highly achievable budget may be challenging, but it can almost always be met by competent managers exerting reasonable effort.<sup>(G)</sup> Bonuses based on meeting and exceeding budgets are often a key element of management compensation. Typically, no bonus is paid unless the budget is met. The bonus often increases when the budget target is exceeded, but the bonus is usually capped out at some level. For obvious reasons, managers who have such a bonus plan or whose performance is evaluated based on meeting budget targets usually prefer to be evaluated based on highly achievable budgets rather than on stretch budgets. Moreover, **highly achievable budgets may help build a manager’s confidence and generate greater commitment to the budget.** And finally, **highly achievable budgets may result in less undesirable behavior** at the end of budgetary periods by managers who are intent on earning their bonuses.<sup>(G)</sup>





A budget helps to motivate employees if some degree of flexibility is allowed, and seen as realistic, the later will be achieved through the participation approach.

Unfortunately, the budget is not always viewed in a positive manner. Some managers view a budget as a **restriction**. **Many managers regard budgets negatively**. To them, the word budget is about as popular as, say, *downsizing, layoff, or strike*. Top managers must convince their subordinates that the budget is a tool designed to help them set and reach goals. Whatever the manager's perspective on budgets—pro or con—budgets are not remedies for weak management talent, faulty organization, or a poor accounting system. (H)

#### Take a note:

The traditional budgeting process **may lead to across-the-board cuts** when early budget iterations show that planned expenses are too high. However, budgeting should not necessarily require across the board cuts, even when expenses are higher than desired. Cost cutting should be based on what is best for the organization. Frequently cuts based on what is best for the organization will not be equally distributed. (HK)

#### Promotes the efficient allocation of organizational resources

A budget helps management to allocate resources efficiently and to ensure that subunit goals are **congruent** with those of other subunits and of the organization.

The budget also can help managers identify current and potential bottlenecks in operations. Critical resources can then be acquired to ease any bottlenecks and prevent such bottlenecks from becoming obstacles to attaining budgetary goals. (B)

Budgets also **provide authority to acquire and to use resources**. The authorization function of budgets is especially important for government and not-for-profit organizations because budgeted amounts, sometimes referred to as *appropriations*, often serve both as approval of activities and as a ceiling for expenditures. (B)

The allocation of scarce resources among competing opportunities is accomplished through implementation of a strategy. A budget is a plan based on a company's strategy for controlling its operations for a specific period of time.

#### Efficient allocation of organizational resources & the preparation of the operating budgets

The process of developing the operating budgets for the individual units in an organization includes identifying the resources that each unit will need to carry out the planned activities.

#### Example:

The process of developing the **production budget** requires projections for direct materials and direct labor that will be required to produce the planned output.

The process of budgeting for **administrative salaries** requires forecasts of administrative employees that will be needed by each department. If funds will be available for only a certain number of administrative employees in the organization, some units' projections may have to be adjusted. This leads to efficient allocation of organizational resources. (HK)

**Efficient allocation of organizational resources during the budgeting process may also include making decisions about the most profitable way to utilize the resources available.**



A decision about what product or products to produce may need to be made under a situation of constraint. A constraint exists when one or more of the factors of production are limited in some way. This type of decision would be required if a plant were operating at full capacity and management wanted to maximize net income without being able to increase capacity.

Decisions made under situations of **constraint** are usually short-run decisions. In the short run, managers must do the best they can with the resources they have. In the long run, however, capacity can be expanded and constraints eliminated, or at least reduced.

When operating at capacity, operating income is maximized by maximizing contribution **margin per unit of the resource that is limiting either the production or the sale of products.**<sup>(HK)</sup>

### Example:

Assume our plant has only 3,000 machine hours available to produce its products, tables and chairs.

The price and variable costs and the number of machine hours required to produce each product are as follows:

	Per Unit Data	
	Chair	Table
Selling Price	\$450.00	\$600.00
Variable Costs	200.00	300.00
Contribution margin	\$250.00	\$300.00
Machine hours/unit	2	4
Contribution margin per machine hour	\$125	\$75

In the short run, under the existing constraint of 3,000 machine hours available per month, producing only chairs will maximize operating income.



## Characteristics of Successful Budgeting

Many factors characterize a successful budget, but no single factor can lead to a successful budget. The common factors in a successful budget include the following:

1. The budget must be aligned with the corporate **strategy**.
2. The budget must be perceived by employees as a **planning, communication, and coordinating** tool, and not as a pressure or blame device.
3. The budget must be characterized as a **motivating** tool to help employees work toward organizational goals.
4. A budget should be **coordinated**.
5. The budget should be used to alleviate potential bottlenecks and to **allocate resources** to those areas that will use the funds most efficiently and effectively.
6. The budget must be seen as an **internal control device**, and internal-use budgets should base evaluations on controllable or discretionary costs.

### Take a note:

Points from 1 to 6 discussed before so we will not give a detailed explanation again.

7. The budget must have the support of management at all levels.
8. Management (including top management) must fully endorse the budget-they must accept responsibility for reaching the budget goals.
9. The single most important factor in assuring its success is for **upper management** to demonstrate that they take the project seriously and consider it vital to the organization's future.
10. A higher authority than the team who developed the budget must review and approve the budget.
11. A budget can be successful only if those responsible for its implementation make it happen.
12. People who are charged with carrying out the budget need to feel ownership of the budget.
13. To be useful, the budget should be an accurate representation of what is expected to occur.

### Take a note:

Points from 7 to 13 will be discussed through the topic "Who Should Participate in the Budgeting Process?"

14. The time period for a budget should reflect the purpose of the budget (will discussed next pages).
15. Sales and administrative budgets need to be detailed in order that key assumptions can be better understood (will discussed next pages).
16. A budget should be flexible.

The final budget should not be easily changed, but it must be flexible enough to be useful.

Budgets should compel planning, promote communication and coordination, and provide performance criteria. The budget process must balance input from those who will need to follow the budget against a thorough and fair review of the budget by upper management. (IMA)



## Characteristics of a Successful Budgeting Process

Whether the organization and its budget are very simple or highly complex, the characteristics of a successful budget process include: the budget period, the participants in the budget process, the basic steps in budgeting, and the use of cost standards (IMA).

### Budget Period

A budget usually is prepared for a set time, most commonly for the fiscal year with subperiod budgets for each of the constituent quarters or months.(B)

Budgets can also be prepared on a **continuous** basis.(HK)

In practice, Johnson & Johnson has only skeleton budgets for its **5- and 10-year budgets**.(B)

### Budget Participants & Budget Process

Three groups make or break a budget: the board of directors, top management, and the budget committee. Middle and lower management also play a significant role, because they create detailed budgets based on upper management's plan. (IMA)

**Methods of budget preparation** differ between companies, but all fall somewhere on a continuum between entirely authoritative and entirely participative.(IMA) , in other words budget development can be done using a participative process, an authoritative process, or a consultative process (combination approach) (HK). Note that the combination approach is sometimes considered to be a form of the participative approach (IMA).

### Basic steps in budgeting

The process usually includes the formation of a budget committee; determination of the budget period; specification of budget guidelines; preparation of the initial budget proposal; budget negotiation, review, and approval; and budget revision.(B)

For instance, the steps that responsibility centers take in preparing their budgets include: the initial budget proposal, budget negotiation, review and approval, and revision.(IMA)

### The use of Cost Standards

Organizations set different types of standards that they strive to achieve, Standards can be either **authoritative** or **participative**, Specific types of standard costs include **ideal** standards and **reasonably attainable** standards, Several sources are often used simultaneously when setting standards: activity analysis, historical data, market expectations, strategic decisions, and benchmarking, establishing a standard cost for direct materials & direct labor . (IMA)



## Budget Period /Time Frames for Budgets

### One Year

A budget/profit plan is generally prepared for a set period of time, ***commonly for one year***, and the annual profit plan is **subdivided** into months or possibly quarters. Usually the budget /profit plan is developed for the **same time period covered by a company's fiscal year**.

When the budget period is the same as the fiscal year, budget preparation is easier and comparisons between actual results and planned results are facilitated. This comparison is called a *variance report*. Variance reporting will be covered in detail in the next major section, Performance Management.(HK)

### Continuous Basis

Budgets can also be prepared on a continuous basis. At all times, the budget covers a set number of months, quarters, or years into the future. Each month or quarter, the month or quarter just completed is dropped and a new monthly or quarterly budget is added to the end of the budget.

At the same time, the other periods in the budget can be **revised** to reflect any new information that has become available. Thus, the budget is **continuously** being updated and always covers the same amount of time in the future. This is called a **rolling budget** or a **perpetual /continuous budget**.

A continuous or perpetual budget is a 12-month budget that rolls forward one month (or quarter) as the current month (or quarter) is completed. In other words, one month (or quarter) is added to the end of the budget as each month (or quarter) comes to a close. This approach **keeps managers focused** at least one year ahead so that they do not become too narrowly focused on short-term results.(G)

### Long-term budget in parallel with the master budget

Firms usually have longer-term budgets, as well. Budgets for the years beyond the coming year usually contain only essential operating data and do not attempt to present a full operating and financial budget.(HK)

In practice, firms **seldom** have budgets for **only one year**. The budgets for the years beyond the coming year, however, usually contain only essential operating data. For example, Johnson & Johnson has *only skeleton budgets for its 5- and 10-year budgets*. (B)

Having a long-term budget in parallel with the master budget allows alignment of strategic goals and short-term operations.(B)



## Who Should Participate in the Budgeting Process?

### Budget Participants

Three groups make or break a budget: the board of directors, top management, and the budget committee. Middle and lower management also play a significant role, because they create detailed budgets based on upper management's plan.<sup>(IMA)</sup>

To gain the benefits of budgeting, **management at all levels** of a company should understand and support the budget and all aspects of the management control system. This is critical for obtaining lower-level management's participation in the formulation of budgets and for successful administration of budgets. Lower-level managers who feel that top management does not "believe" in a budget are unlikely to be active participants in a budget process.<sup>(H)</sup>

The profit plan must have the support of **management at all levels**. The support of top management is critical to gain the support of lower-level managers, and the support of lower-level managers is critical in order to gain the support of the affected employees.<sup>(HK)</sup>

### Board of Directors

The budget process begins with the **mission** statement formulated by the board of directors.<sup>(GL)</sup> The board of directors **does not create the budget**, but the BOD responsible for reviewing the budget and either approves it or send it back for revision. The board usually appoints the members of the budget committee.<sup>(IMA)</sup>

### Top Management

#### Responsibilities

- Senior management translates the **mission** statement into a **strategic plan** with measurable, realizable goals.<sup>(GL)</sup>
- Either senior management or a budget committee made up of senior managers **provides budget guidelines** based on their strategic plans, assumptions about the economy, and other relevant factors.<sup>(HK)</sup>
- Top management is ultimately responsible for their budgets, and their primary means of exercising this responsibility is to **ensure that all levels of management understand and support** the budget and the overall budget control process (i.e., using the budget process to communicate goals).<sup>(IMA)</sup>
- Top management should use the budget to define its plans and goals for the period so that other managers and employees have access to this information. <sup>(B)</sup>
- Senior managers **review the initial budgets** that received from division heads, and send them back to the department heads for revision.
- Top managers should **give** their subordinates **incentives for making truthful and complete budgets**, such as rewarding accuracy.
- A common problem that needs to be avoided is budget slack. Budget slack occurs when budgeted performance differs from actual performance because managers tend to build in some extra money for their budget to deal with the unexpected. Budget slack is built-in freedom to fail, and cumulative budget slack at each sublevel can result in a very inaccurate master budget. <sup>(IMA)</sup>
- In administering the budget program, it is particularly important that top management **not use the budget to pressure or blame employees**. Using budgets in such negative ways will breed hostility, tension, and mistrust rather than cooperation and productivity.<sup>(G)</sup>
- Top management should use the budget and variance reports to reevaluate the strategy if needed.<sup>(H)</sup>





### Nature of senior management's involvement

- Top management involvement does not extend to dictating the exact numerical contents of the budget since top management lacks a detailed knowledge of daily operations.<sup>(GL)</sup>

### The importance of senior management's involvement

- Top management's belief in and support of the planning and budgeting process is the single most important element in its success.<sup>(GL)</sup>
- Budgeting is a cross-functional activity. Top management's strategies for achieving revenue and operating income goals **influence the costs planned for the different business functions of the value chain**. For example, a budgeted increase in sales based on spending more for marketing must be matched with higher production costs to ensure that there is an adequate supply of tables and with higher distribution costs to ensure timely delivery of tables to customers.<sup>(H)</sup>
- If top management is not perceived to endorse a budget, **line managers will be less likely to follow the budget precisely**.<sup>(IMA)</sup>
- The importance of senior management's involvement cannot be over-emphasized. The support of top management is crucial in order to **obtain successful development and administration of the budget**.<sup>(HK)</sup>
- Furthermore, top management support is necessary in order to **gain lower-level management participation**. If lower-level managers feel that top management does not support the effort, they are not likely to support it either.<sup>(HK)</sup>
- The budget review and approval process ensures top management that **budget guidelines are being followed**.
- Top management's active involvement in reviewing and approving the proposed budget is an effective way to **discourage lower-level managers from playing budget games**. (Submitting budgets with easy targets and adding slack to a budget.)
- The active involvement of top management also motivates lower managers to believe in the budget, be candid in its preparation, and be dedicated to attaining its goals because they know that the boss cares about the budget.
- An organizational budget requires a significant commitment of internal resources. **The single most important factor** in assuring its success is for upper management to demonstrate that they take the project seriously and consider it vital to the organization's future.<sup>(GL)</sup>

### Budget Committee

#### Committee Structure

Large corporations usually need to form a budget committee that have the highest authority in an organization for all matters related to the budget, composed of senior management, and often led by the **chief executive officer** or a vice president. The size of the committee will vary depending on the organization. <sup>(IMA,B)</sup>

- A typical budget committee includes the chief executive officer (CEO) or one or more vice presidents, heads of strategic business units, and the chief financial officer (CFO). In some organizations, the CEO makes all budget decisions and there is no committee.<sup>(B)</sup>
- This committee may consist of the president; vice presidents in charge of various functions such as sales, production, and purchasing; and the controller.<sup>(G)</sup>



### Responsibilities

The budget committee oversees all budget matters, responsible for overall policy relating to the budget program and for coordinating the preparation of the budget itself.<sup>(G)</sup>.

- **Directs budget preparation & providing initial budget guidelines** that **set the tone** for the budget and govern its preparation.
- Establish the **priorities** and provide the necessary support.
- **Sets and approves** the overall budget **goals** for all major business units,
- **Resolves conflicts** and differences that may arise during budget preparation and rules on disagreements,
- **Coordinates** budget preparation,
- **Monitors** the budget,
- **Monitors** operations as the year unfolds,
- **Reviews** the operating results at the end of the period.
- **Reviews** the budget for consistency with the budget guidelines, attainment of the desired short-term goals and strategic objectives of the organization
- **Approves major revisions** of the budget during the period.
- **Approves the final budget**, the budget committee gives final approval, and the CEO then approves the entire budget and submits it to the board of directors.<sup>(B,IMA)</sup>

### Middle and Lower Management

Once the budget committee sets the tone for the budget process, many others in the organization have some role to play. Middle and lower management **do much of the specific budgeting work**.

#### Question

Why Top managers want lower-level managers to participate in the budgeting process?

#### Answer

Top managers want lower-level managers to participate in the budgeting process **because lower-level managers have more specialized knowledge** and first-hand experience with day-to-day aspects of running the business, they know what is possible, what is not possible, and what resources are required to meet a specific level of activity and this is the bottom up part.<sup>(H,HK)</sup>

**Participation creates greater commitment and accountability** toward the budget among lower-level managers. This is the bottom-up aspect of the budgeting process.<sup>(H)</sup>

### Responsibilities

Middle and lower management receive their budget instructions, **draw up their departmental budgets** in conformity with the guidelines, and **submit them to the budget committee**.

### Budget Department or The budget director/controller

The budget department is responsible for **compiling the budget and managing the budget process**. The budget director and department are **not responsible for actually developing the estimates** on which the budget is based. This role is performed by those to whom the resulting budget will be applicable. The budget director has **staff**, not line, authority. (S)he has a technical and advisory role. The final decision-making responsibility rests with line management. <sup>(GL)</sup>



## Methods of budget preparation -Authoritative or Participative Budgeting?

The success of a budget program is largely determined by the way a budget is developed. (G)

Methods of budget preparation differ between companies, but all fall somewhere on a continuum between entirely authoritative and entirely participative.

### In an authoritative budget (top-down budget- imposed budget).

Top management sets everything from strategic goals down to the individual items of the budget for each department and expects lower managers and employees to adhere to the budget and meet the goals. (IMA)

Authoritative budgeting provides better decision-making control than does participative budgeting.

Top management sets the overall goals for the budget period and prepares a budget for operating personnel to attain the goals.

An authoritative budget, however, often lacks the commitment ("buy-in") of lower-level managers and employees responsible for implementing it. (B)

### In a participative budget (bottom-up or self-imposed budget).

Managers at all levels and certain key employees cooperate to set budgets for their areas, and top management usually retains final approval. (IMA)

A participative budget is a good communication device.

The process of preparing a budget often gives top management a better grasp of the problems their employees face and provides the employees a better understanding of the dilemmas that top management deals with. A participative budget also is more likely to gain employee commitment to fulfill budgetary goals. Unless properly controlled, however, a participative budget can lead to easy budget targets or targets not in compliance with the organization's overall strategy.

The ideal process combines the features of each and falls somewhere between these methods, Note that the *combination approach* is sometimes considered to be a form of the participative approach. (IMA)

An effective budgeting process often combines both top-down and bottom-up budgeting approaches. Divisions prepare their initial budgets based on the budget guidelines issued by the firm's budget committee. Senior managers review and make suggestions to the proposed budget before sending it back to the divisions for revisions. The final budget usually is reached after several rounds of negotiations. For this reason, this is generally referred to as a *negotiated budgeting* process. (B)

A *consultative budget* is a *combination* of authoritative and participative budget development methods. Senior management asks for *input from lower-level managers* but then develops the budget with *no joint decision-making or negotiation* involved. (HK)

**Budgeting needs to be both bottom up and top down. Despite its advantages, a budget neither ensures improved cost control nor prevents inefficiencies.**



## Advantages and Disadvantages of Participative Budget Development

### Advantages include the following:

#### A participative budget is a good communication device.<sup>(HK)</sup>

The process of preparing the budget participatively gives senior managers a **better grasp of the problems** their employees face. The employees' knowledge is more specialized and they have the hands-on experience of running the business on a day-to-day basis. At the same time, employees gain a better understanding of the problems experienced by top management.<sup>(HK)</sup>

#### A budget is potentially a good motivational tool.<sup>(GL)</sup>

- A budget is potentially a good motivational tool. If lower level managers have participated in preparing the budget, instead of simply receiving a budget imposed by top management, they are **more likely to understand and share the goals of top management** and to **work to keep costs within the budget**.<sup>(GL)</sup>
- Managers are **more motivated** to achieve budgeted goals when they are involved in budget preparation. A broad level of participation usually leads to **greater support** for the budget and the entity as a whole, as well as a greater understanding of what is to be accomplished.<sup>(GL)</sup>
- Bottom-up budgeting is the **best way of motivating managers** to meet budget estimates because it permits participation in the budget process. Lower level managers who take part in budgeting decisions are **more likely to support the result** and **less likely to feel that the budget has been imposed from above**.<sup>(GL)</sup>
- However, a budget is also a motivator in the sense that **managers are accountable for variances in controllable costs** but are rewarded for good performance. Moreover, budgeting coupled with analysis of variances **tends to improve motivation by allowing upper-level managers to concentrate on problems** (exceptions) rather than engaging in routine supervision of subordinates, which may be viewed as unnecessarily intrusive and unwelcome. <sup>(GL)</sup>
- It gives them a **feeling of ownership of the process**.<sup>(HK)</sup>

#### A participative budget is more likely to be achievable.<sup>(GL)</sup>

- A participative budget is more likely to gain **employee commitment** to fulfill budgetary goals. People are more willing to devote extra effort to attain goals they perceive as their own.<sup>(HK)</sup>
- A participative budget is more likely to be **achievable** because it was developed with input from the people responsible for achieving it.<sup>(HK)</sup>
- Participation and understanding are also likely to result in budgets that are **reasonably attainable and viewed as realistic**, as participative budgeting is a practical means of setting **realistic, achievable budget goals**.<sup>(GL)</sup>
- Also, managers **cannot blame unrealistic objectives** as an excuse for not achieving budget expectations when they have helped to establish those objectives. Despite the involvement of lower level managers, senior management must still participate in the budget process to ensure that the combined objectives of the various departments are **consistent with profitability objectives** of the company. <sup>(GL)</sup>
- Participation **adds credibility** to the budgeting process and **creates greater commitment and accountability** toward the budget.<sup>(H)</sup>



### Advantages of a participative budget include greater accuracy of budget estimates

Managers with immediate operational responsibility for activities have a better understanding of what results can be achieved and at what costs. (GL)

Since department managers have the most detailed knowledge about organizational operations, they should use this information as the **building blocks** of the operating budget.

### Participatory budgeting involves extensive coordination between departments. (GL)

Goal congruence is one of the advantages of participatory budgeting. (GL)

### Disadvantages include the following:

#### Budget targets that are too easy to achieve.

- Unless senior management controls the budget process properly, a participative budget can lead to budget targets that are too easy to achieve, or **budgetary slack**. Budgetary slack, which will be discussed later in more depth, is the practice of **underestimating planned revenues** and **overestimating planned costs** to make the overall budgeted profit more achievable. It is the difference between the amount budgeted and the amount the manager actually expects. (HK)
- Without a review, self-imposed budgets may be **too slack**, resulting in **suboptimal performance**. (G) Suboptimal decision making is not likely to occur when guidance is given to subunit managers about how standards and goals affect them. (GL)

### Participative budget can lead to targets not in compliance with the organization's strategy

- Unless properly controlled, however, a participative budget can lead to easy budget targets or targets **not in compliance with the organization's strategy or budget**. (B)
- Integrating corporate **strategic plans** into the budget can be **more difficult** when it has a bottom-up process. (HK)
- Budgets proposed by the lower-level managers will **lack coherent direction**. (G)

### Time-Consuming

Participative budgeting is more **time-consuming** than authoritative budgeting because lower-level managers and employees need to meet and negotiate their budgets. (HK)

### Advantages and Disadvantages of Authoritative Budget Development

#### Advantages include the following:

#### Better control

An authoritative budget process gives senior management **better control** over the decision-making process than participative budgeting. (HK)





### Facilitates the implementation of strategic plans

Authoritative budgeting places more emphasis on the achievement of the **strategic plans** developed by top management. <sup>(HK)</sup>

Strategic plans are long-term in nature and require a good deal of coordination in order to be successful. Senior management's job is to position each division and department appropriately to fulfill their role in the long term organizational plan. Top-down budgeting achieves this more readily than bottom-up budgeting, because senior management has the required long-term perspective and lower level managers do not.

### Reduces the time required for budgeting

Authoritative budget development can be done **more rapidly** and with **greater flexibility** than participative budgeting because it eliminates the need to meet with lower-level managers to negotiate their budgets. <sup>(HK)</sup>

When the budget is dictated from above, departmental managers do not need to spend time putting together their plans and ideas for the future. Furthermore, there is no need for lower level managers to make adjustments to the first draft of the budget, as is done with bottom up budgeting after senior management has examined the first draft budgets of the lower level managers. The result is that **less time is required** for the budgeting process. <sup>(HK)</sup>

### Increases coordination of divisional objectives

Since a top-down budget is imposed by upper management, coordinating the objectives of separate divisions is simplified. <sup>(GL)</sup>

Frequently, departmental managers have blinders on and are unaware of what is happening in other areas of the company. Senior management has a better perspective of the big picture and what will be necessary to achieve overall organizational objectives. <sup>(HK)</sup>

### Budgetary slack is not a problem.

#### Disadvantages include the following:

#### Lacks commitment ("buy-in") of lower-Level managers

Because lower-level managers and employees (that is, those responsible for implementing the budget) have no input into the budget development process, they will usually have **less commitment** to the budget and be less accepting of it. <sup>(HK)</sup>

#### May result in a budget that is not possible to achieve

Because an authoritative budget lacks input from lower-level managers, its **objectives may not be practical** or possible to achieve because it does not take into account existing limitations that senior management might not be aware of. <sup>(HK)</sup>

#### May limit the acceptance of proposed goals and objectives

When senior management determines the budget without input from the departments being held to that budget, employees **are less likely to feel they can / want to achieve the target**. It wasn't their idea and no one listened to them.

An authoritative budget issues, or dictates, orders. People are likely to resent being given orders and a **morale problem** may result. <sup>(HK)</sup>





## Reduces the communication between employees and management

**Communication** between senior management and lower-level management and employees is reduced with an authoritative budgeting process.

As these comments suggest, **all levels in the organization should work together** to produce the budget. **Lower-level managers are more familiar with day-to-day operations** than top managers. **Top managers** should have a **more strategic perspective** than lower level managers. Each level of responsibility in an organization should contribute its unique knowledge and perspective in a cooperative effort to develop an integrated budget.<sup>(G)</sup>

Unfortunately, most companies **do not follow the budgeting process** we have described. Typically, **top managers** initiate the budgeting process by **issuing profit targets**. Lower-level managers are directed to prepare budgets that meet those targets. The difficulty is that the targets set by top managers may be **unrealistically high or may allow too much slack**. If the targets are **too high** and employees know they are **unrealistic**, **motivation will suffer**. If the targets allow **too much slack**, **waste will occur**.

Unfortunately, the budget is too often used as a **pressure device** and **excessive emphasis** is placed on “**meeting the budget**” **under all circumstances**. Rather than being used as a weapon, the budget should be used as a positive instrument to assist in establishing goals, measuring operating results, and isolating areas that need attention.<sup>(G)</sup>

### Advantages and Disadvantages of Consultative Budget Development

Since consultative budget development is a compromise between participative and authoritative budgeting, it has many of the advantages and disadvantages of both.

- Since senior management makes the final decisions without any negotiation, management maintains control over the process. As a result, senior management’s **strategic plans are integrated** into the budget and **budgetary slack is not a problem**.
- The amount of **time required** to develop a consultative budget is **greater** than the time required for an authoritative budget but less than the time required for a participative budget.
- If lower-level managers see the input they provided incorporated into the final budget, they may be nearly as **accepting** and **committed** to the budget as they would have been had it been developed participatively. However, if they feel their input has been disregarded, they may be even more resentful than if they had never been asked to provide input in the first place. To ask for input and then not use it is dismissive. The lower-level managers whose input has been ignored could probably not be expected to provide much input into future budget development processes.

An effective budgeting process therefore usually combines both top-down and bottom- up budgeting approaches. Divisions prepare their initial budgets based on the budget guidelines issued by the firm's budget committee. Senior managers review and make suggestions to the proposed budget before sending it back to the divisions for revisions. The final budget usually results from more participation, not enforced negotiations.

✚ **Thus, the right approach is a good balance of top management involvement with lower-level managers.**

✚ Greatest amount of positive motivation and goal congruence can be achieved if the firm have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.

✚ Senior management must still participate in the budget process to ensure that the combined objectives of the various departments are consistent with profitability objectives of the company and managers pursue objectives consistent with those set by top management.



## Behavioral Issues in Budgeting

The human aspects of budgeting are extremely important.<sup>(G)</sup> To encourage a successful budgeting process management must consider a number of behavioral issues, as discussed below.<sup>(B)</sup>

As we discussed earlier in this chapter, budgeting is most effective when lower-level managers actively participate and meaningfully engage in the budgeting process. Participation adds credibility to the budgeting process and creates greater commitment and accountability toward the budget. But participation requires **“honest” communication** about the business from subordinates and lower-level managers to their bosses. At times, subordinates may try to **“play games”** and build in **budgetary slack**.<sup>(H)</sup>

### Budgetary Slack or Padding the budget

Budgetary slack describes the practice of **underestimating budgeted revenues**, or **overestimating budgeted costs**, to make budgeted targets more **easily achievable**. It frequently occurs when budget variances (the differences between actual results and budgeted amounts) are used to evaluate performance.<sup>(H)</sup>

**Budgetary slack, or padding the budget**, is the practice of managers **knowingly** including a higher amount of expenditures (or lower amount of revenue) in the budget than they actually believe will occur. When the actual cost (or revenue) amounts are realized and compared to “budgeted” figures, an appearance of successful effort is indicated.<sup>(B)</sup>

### Why managers build slack into the budget ?

Line managers are also **unlikely to be fully honest** in their budget communications if top management mechanically institutes **across-the-board cost reductions** (say, a 10% reduction in all areas) in the face of projected revenue reductions. Budgetary slack provides managers with a **hedge against unexpected adverse circumstances**.<sup>(H)</sup>

Managers often justify such practices as **insurance against uncertain future** events. After all, no one knows exactly how the future will unfold.<sup>(B)</sup>

**On the positive side**, budgetary slack can provide managers with a cushion against unforeseen circumstances. This can limit managers’ exposure to uncertainty and thereby reduce their risk aversion. The reduced anxiety about risk may help the managers make decisions that are more closely congruent with the goals of senior management. However, budgetary slack often creates more problems than it solves.<sup>(HK)</sup>

### Adverse effects of Budgetary Slack

- Budgetary slack **misleads top management** about the true profit potential of the company, which **leads to inefficient resource planning and allocation and poor coordination** of activities across different parts of the company.<sup>(H)</sup>
- Budgetary slack, however, **wastes resources** and could lead employees to **make half-hearted efforts** to meet or exceed the budget.<sup>(B)</sup>
- Budget slack is built-in freedom to fail, and cumulative budget slack at each sublevel can result in a **very inaccurate master budget**.<sup>(IMA)</sup>
- Budgetary slack can **misrepresent the true profit** potential of the company.
  - As a result, planning inaccuracy spreads throughout the company. If **sales** are planned **too low**, **production** will also be planned **too low**, possibly leading to **product shortages** because budgeted demand has been understated. The advertising program and distribution expense budgets may be planned incorrectly, and the cash budget might be inaccurate.<sup>(HK)</sup>



## How companies avoid problems of budgetary slack?

- Some companies use budgets primarily for planning purposes. They **evaluate managerial performance using multiple indicators** that take into account various factors such as the prevailing business environment and performance relative to competitors.
  - Evaluating performance in this way takes time and requires careful exercise of judgment. <sup>(H)</sup>
- Other companies use budgets for both planning and performance evaluation and use different approaches to obtain accurate information.
  - To explain one approach, let's consider the plant manager of a beverage bottler who is suspected by top management of understating the productivity potential of the bottling lines in his forecasts for the coming year. His presumed motivation is to increase the likelihood of meeting next year's production bonus targets. Suppose top management could purchase a consulting firm's study that reports productivity levels—such as the number of bottles filled per hour—at a number of comparable plants owned by other bottling companies. This report shows that its own plant manager's productivity forecasts are well below the actual productivity levels being achieved at other comparable plants. Top management could share this independent information source with the plant manager and ask him to explain why his productivity differs from that at other similar plants. Management could also base part of the plant manager's compensation on his plant's productivity in comparison with other “benchmark” plants rather than on the forecasts he provided. Using external benchmark performance measures reduces a manager's ability to set budget levels that are easy to achieve. <sup>(H)</sup>
- Another approach to reducing budgetary slack is for managers to **involve themselves regularly in understanding what their subordinates are doing**.
  - Such involvement should **not** result in managers **dictating the decisions** and actions of subordinates. Rather, a manager's involvement should take the form of providing support, challenging in a motivational way the assumptions subordinates make, and enhancing mutual learning about the operations.
  - Regular interaction with subordinates allows managers to become knowledgeable about the operations and diminishes the ability of subordinates to create slack in their budgets. <sup>(H)</sup>
- Some companies, such as IBM and Kodak, have designed **innovative performance evaluation measures** that reward managers based on the **subsequent accuracy of the forecasts used in preparing budgets**. For example, the *higher and more accurate* the budgeted profit forecasts of division managers, the higher their incentive bonuses. <sup>(H)</sup>
  - The best way to avoid the problems caused by budgetary slack is to **use the budget/profit plan as a planning and control tool but not for managerial performance evaluation**.
    - If the company does use the budget to evaluate managers, it could **reward them based on the accuracy of the forecasts** they used in developing their budgets.
      - For example, the company's senior management could say that the more accurate a division manager's budgeted profit forecast is and the greater the amount by which it is exceeded, the higher the manager's bonus will be. <sup>(HK)</sup>
- A firm may decrease slack by emphasizing the consideration of all variables, **holding in-depth reviews** during budget development, and allowing for flexibility in making additional budget changes.



## **Budgetary Slack and Its Impact on Goal Congruence**

**Goal congruence** is a term that refers to the **degree of consistency between the goals of the firm, its subunits, and its employees.**<sup>(B)</sup>

**Goal congruence** exists when individuals and groups **work toward achieving the organization's goals**—that is, managers working in their own best interest take actions that **align with the overall goals of top management.**<sup>(H)</sup>

In general, a firm's goals should be as consistent as possible with the goals of its employees.

A **budget** devoid of considerations for goal congruence is **not likely to achieve** the most desirable results. A **budget** that aligns the firm's goals with those of its employees has a much better chance to realize **successful** operations and attain desirable results.<sup>(B)</sup>

There are at least three major factors that affect the level of goal congruence achieved: (1) the extent to which employees participate in the budgeting process; (2) the level of difficulty embedded in the budget; and (3) whether and how compensation is linked to budgeted performance.

### **Spending the budget**

Spending the budget is another serious ethical issue in budgeting. Managers could believe that if they do not use all the budgeted amounts, their future budgets will be reduced.

## **The Budgeting Process**

The **traditional budgeting process** can range from the informal simple processes small firms use that take only days or weeks to complete to elaborate, lengthy procedures large firms or governments employ that span months from start to final approval. The process usually includes the formation of a budget committee; determination of the budget period; specification of budget guidelines; preparation of the initial budget proposal; budget negotiation, review, and approval; and budget revision.

### **Budget guidelines are set and communicated.**

In a traditional budgeting process the **budget committee** (or senior management) is responsible for providing initial budget guidelines that **set the tone** for the budget and govern its preparation.

The committee issues budget guidelines after careful considerations on:

- the general outlook of the economy and the market;
- the organization's strategic goals, long-term plan, strategic projects, and
- expected operating result of the current period;
- specific corporate decisions or policies such as mandates for downsizing, reengineering, pollution control, and
- special promotions; and short-term objectives.

All responsibility centers (or budget units) follow the budget guidelines in preparing their budgets.

### **Initial budget proposals are prepared by responsibility centers**

Each responsibility center manager prepares an initial budget proposal using the budget guidelines as well as their own knowledge about their own area (such as introduction of new products or changes to be made in product design or manufacturing processes).

In addition, budget units need to consider a number of internal and external factors in preparing their budget proposals.

### **Negotiation, review, and approval.**

The executives of budget units **examine** initial budget proposals. The examination includes:

- determining adherence to the budget guidelines,
- verifying that the budget goals can be reasonably attained and are in line with the goals of the immediately higher organizational unit, and
- assuring that the budgeted operations are consistent with those of other budget units.



As budget units complete their budgets within the units, the budgets go through successively higher levels of the organization until they reach the top level and the combined unit budgets become the organization's budget. Any changes that are needed are **negotiated** between the responsibility center managers and their superiors. Budgets go through successive levels of management, and at each point they may be **renegotiated**. These **negotiations are the most important part** of the budget preparation process and also the most time-consuming part. Eventually, all of the individual unit budgets are combined into the consolidated master budget (first draft). The consolidated master budget will consist of a set of budgeted financial statements: balance sheet, income statement, and statement of cash flows.

The budget committee **reviews** the budget for consistency with the budget guidelines, attainment of the desired short-term goals and strategic objectives of the organization.

The **budget committee gives final approval**, and the CEO then approves the entire budget and submits it to the board of directors.

### **Revisions.**

Even after the profit plan has finally been adopted, it should **be able to be changed** if the assumptions upon which it was built change significantly. New information about internal or external factors may make revision of the profit plan necessary.

In addition, periodic review of the approved budget for possible changes or use of a **continuous budget** that is continually being updated might be advisable. Although updating the budget provides better operating guidelines, budget revisions that are too easy or too frequent might encourage responsibility centers to not take the budgeting process seriously. The budget should be **revised only** when circumstances have changed significantly and the changes are beyond the control of the responsibility center manager or the organization.<sup>(HK)</sup>

Procedures for budget revisions vary among organizations. For organizations that allow budget revisions only under special circumstances, obtaining approval to modify a budget can be difficult. Not all events, however, unfold as predicted in a budget. Strictly implementing a budget as prescribed, even when the actual events differ significantly from those expected, certainly is not a desirable behavior. In such cases, managers should be encouraged **not** to rely on the budget as the absolute guideline in operations.<sup>(B)</sup>

Management **should not** be required to rely on the budget as the sole operational guideline. Regular revisions may provide better operating guidelines, however this may lead managers to anticipate regular changes and not prepare budgets as carefully as they should. Organizations that allow regular revisions should make sure that the threshold for revision is set high enough to keep employees working as efficiently as possible. When regular revisions occur, a copy of the original budget should be kept for comparison with actual results at the end of the period.<sup>(IMA)</sup>

### **Best Practice Guidelines for the Budget Process**

Best practices in budgeting include the following, some of which have already been discussed:

- **The development of the profit plan should be linked to corporate strategy.**
- **Use the budgeting process to minimize the adverse effects that anticipated problems might have on operations.**
- The profit plan must have the support of management at all levels.
- Communication is vital.
- The profit plan should be coordinated
- The profit plan should be a motivating device.
- Design procedures to allocate funding resources strategically.
- Managers should be evaluated on performance measures other than simply meeting budget targets.





- Link cost management efforts to budgeting.
- The strategic use of variance analysis.
- Reduce budget complexity and budget cycle time.
- The time period for a budget should reflect the purpose of the budget.
- Develop budgets that can be revised if necessary. A budget should be flexible.
- Budgeting should not be rigid.

**Develop budgets that can be revised if necessary. A budget should be flexible.**

- If conditions change during the budget period, the budget should not be used as an excuse for not doing some-thing that is strategically important to the company, such as acting on an unforeseen business opportunity that arises.
  - If an unplanned large maintenance expense is needed, the budget should not require a manager to postpone repairs if doing so will hurt the company in the long run. By having a process in place to revise the budget when change is warranted, a company can respond to competitive threats or opportunities more quickly.
  - Furthermore, when budget developers know that the budget will have some flexibility, they **will feel less need to pad their budgets** with budgetary slack (see Budgetary Slack and Its Impact on Goal Congruence, below), which they otherwise might do in order to cover any possible development. This leads to more realistic profit plans.
  - Review the profit plan on a regular basis throughout the year. These reviews should report on changes in business conditions and **alert managers that new tactics** may be called for if they are to meet their targets for the year. This goes along with **revising the budget when necessary**. The budget should not be revised to cover up for poor performance or poor planning, but best-practice companies choose to revise the profit plan rather than stick with a plan that no longer reflects current conditions.

**Budgeting should not be rigid.**

- If revenue decreases are anticipated for the coming year, an “across the board” cost reduction applied to all areas can create additional problems. A coordinated effort should be made to find where making cuts would do the least damage to company operations.
- However, rigid enforcement of budgets will, in some situations, cost an organization more in the long run than if some flexibility is allowed.
  - For example, a manufacturer could lose thousands of dollars if the maintenance manager refuses to approve overtime for its mechanics to make an urgent repair because "it would use up too much of the maintenance budget." (IMA)

**Budgets should not be administered rigidly.**

Attaining the **budget is not an end in itself**, especially when conditions change dramatically. A manager may commit to a budget, but if a situation arises in which some unplanned repairs or an unplanned advertising program would serve the long-run interests of the company, the manager should undertake the additional spending.





## Budgeting and Responsibility Accounting

To attain the **goals** described in the **master budget**, a company must coordinate the efforts of all its employees—from the top executive through all levels of management to every supervised worker. Coordinating the company's efforts means assigning *responsibility* to managers who are *accountable* for their actions in planning and controlling human and other resources.<sup>(H)</sup>

Each manager, regardless of level, is in charge of a responsibility center. A **responsibility center** is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities. Four types of responsibility centers are cost centers, revenue centers, profit centers, and investment centers.<sup>(H)</sup>

Control in an organization is exercised through responsibility centers. Therefore, as we have maintained throughout this discussion, budgeting must also be done at the responsibility center level. However, responsibility center managers should be responsible for budgeting only the costs that they can control.<sup>(HK)</sup>

### Take a Note:

When we look at performance measurement in Section C, we will see this idea again. In Section C we discuss that managers should only be evaluated on things that they are able to control or influence.

**The higher the manager's level**, the **broader** the responsibility center and the **larger** the number of his or her subordinates.<sup>(H)</sup>

**Responsibility accounting** is a system that measures the plans, budgets, actions, and actual results of each responsibility center.<sup>(H)</sup>

## Responsibility and Controllability

**Controllability** is the degree of **influence** that a specific manager has over costs, revenues, or related items for which he or she is responsible.<sup>(H)</sup>

A **controllable cost** is any cost that is primarily **subject to the influence** of a given responsibility center manager **for a given period**.<sup>(H)</sup>

### Take a Note:

A responsibility accounting system could either **exclude all uncontrollable costs** from a manager's performance report or **segregate such costs from the controllable costs**.<sup>(H)</sup>

For example, a machining supervisor's performance report might be confined to direct materials, direct manufacturing labor, power, and machine maintenance costs and might **exclude costs such as rent & taxes paid on the plant**.<sup>(H)</sup>

Some costs are controllable by a given manager and some costs are not. "**Controllable costs**" refers to costs for which the manager has the **authority** to make the decisions about how money will be spent. "**Non-controllable costs**" refers to costs that are ordinarily controlled at a **higher level** in the organization, such as the manager's salary or bonus. **The manager's salary or bonus is controllable**, but not by the manager. The manager's salary will usually be assigned to his or her responsibility center's budget and will appear on reports comparing actual results to the budgeted amount, but the manager should not be held responsible for it.

**The allocation of the indirect costs** of the organization as a whole may be another **non-controllable cost**, since indirect costs may be allocated on any of a number of bases, some of which may be controllable by the manager of the responsibility center and some of which may not.



Each budgeted cost assigned to a responsibility center should be identified as either controllable or non-controllable by that responsibility center's management. For example, salaries in the accounting system may be segregated in two accounts: controllable salaries and non-controllable salaries. Each would then be budgeted by the person who has control over it, and that person would be responsible for explaining the variances.

### Cost classification according to performance evaluation VS. the cost classification according to behavior

It is also important to recognize that fixed costs and indirect costs are not always uncontrollable, and variable costs and direct costs are not always controllable. The nature of each cost will vary according to its characteristics and each cost should be analyzed to determine who controls it.

#### Question

Why in practice, controllability is difficult to pinpoint?

#### Answer

For at least two reasons:

- **Few costs are clearly under the sole influence of one manager.**
  - For example, **prices of direct materials** may be influenced by a purchasing manager, but these prices also depend on **market conditions** beyond the manager's control. **Quantities** used may be influenced by a production manager, but quantities used also depend on the **quality of materials purchased**. Moreover, managers often work in teams. Think about how difficult it is to evaluate individual responsibility in a team situation. (H)
- **With a long enough time span, all costs will come under somebody's control.**
  - However, most performance reports focus on periods of a year or less. A current manager **may benefit** from a predecessor's accomplishments or **may inherit** a predecessor's problems and inefficiencies.
    - For example, present managers may have to work under undesirable contracts with suppliers or labor unions that were negotiated by their predecessors. How can we separate what the current manager actually controls from the results of decisions made by others? Exactly what is the current manager accountable for? Answers may not be clear-cut. (H)

All costs should be included on some manager's variance report and identified as the responsibility of that manager on whose report they appear. If an expense is classified as non-controllable on a given manager's budget reports, then that expense should be included as a controllable expense on the report of the higher-level manager who makes the decisions that affect that expense.

Note: All costs should be controlled by someone. Whenever no one is responsible for a cost, the uncontrolled cost creates great risk for the company.

#### Take a Note:

- Executives differ in how they embrace the controllability notion when evaluating those reporting to them.
  - Some CEOs regard the budget as a firm commitment that **subordinates must meet**. Failure to meet the budget is viewed unfavorably.
  - Other CEOs believe a **more risk-sharing approach** with managers is preferable, in which noncontrollable factors and performance relative to competitors are taken into account when judging the performance of managers who fail to meet their budgets. (H)



This distinction between controllable and non-controllable costs is especially important if managers' performance evaluations will be dependent upon meeting budgetary targets. (Although we have said this is **not a good idea**, it may be done in some organizations.) If other performance measures are used to evaluate managers, this distinction may be less important.

## Question

Why managers should **avoid** overemphasizing controllability?

## Answer

Responsibility accounting is more far-reaching. It focuses on **gaining information and knowledge, not only on control**.

*Responsibility accounting helps managers to first focus on whom they should ask to **obtain information** and **not** on whom they should **blame**.*<sup>(H)</sup>

Responsibility accounting involves holding managers responsible for only those things under his/her discretion and control, such as net revenue and controllable division costs.

For example, if actual revenues at a Marriott hotel are less than budgeted revenues, the managers of the hotel may be tempted to **blame the sales manager** for the poor performance. The fundamental purpose of responsibility accounting, however, is **not** to fix **blame but to gather information** to enable future improvement.<sup>(H)</sup>

Managers want to know who can tell them the most about the specific item in question, regardless of that person's ability to exert personal control over that item.

For instance, **purchasing managers** may be held accountable for total purchase costs, **not** because of their **ability to control market prices**, but because of their **ability to predict uncontrollable prices** and to explain uncontrollable price changes.<sup>(H)</sup>

Similarly, managers at a Pizza Hut unit may be held responsible for operating income of their units, even though they (a) do **not** fully **control selling prices** or the **costs** of many food items and (b) have **minimal flexibility** about what items to sell or the ingredients in the items they sell. They are, however, in the best position to **explain differences** between their actual operating incomes and their budgeted operating incomes.

## Question

How do companies use responsibility centers? Should performance reports of responsibility center managers include only costs the manager can control?

## Answer

A responsibility center is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities.

Responsibility accounting systems are useful because they measure the plans, budgets, actions, and actual results of each responsibility center. **Controllable costs** are costs primarily subject to the influence of a given responsibility center manager for a given time period. **Performance reports** of responsibility center managers **often include** costs, revenues, and investments that the managers **cannot control**. Responsibility accounting associates financial items with managers on the basis of which manager has the **most knowledge and information** about the specific items, **regardless** of the manager's ability to exercise **full control**.



## Cost Standards in Budgeting

A **standard cost** is a **carefully** determined cost a firm or organization sets for an operation, the cost the firm or organization **should** incur for the operation. A standard cost usually is expressed on a **per-unit basis**. Standard costs are incorporated into budgets and as such can be used to monitor and control operations, and to evaluate performance.<sup>(B)</sup>

A standard is a **carefully** determined *price, cost, or quantity* that is used as a benchmark for judging performance. <sup>(H)</sup>

**Standard costs** are **predetermined expectations** about how much a **unit of input**, a **unit of output**, or a given activity should cost. The use of standard costs in budgeting allows the **standard-cost system** to alert management when the actual costs of production differ significantly from the standard.  
(GL)

### Take a Note:

The term “standard” refers to many different things. Always clarify its meaning and how it is being used.

Consider Webb Company, a firm that manufactures and sells jackets. The jackets require tailoring and many other hand operations.

Consider how Webb determines its **direct manufacturing labor standards**.

Webb conducts *engineering studies* to obtain a detailed breakdown of the steps required to make a jacket. Each step is assigned a standard time based on work performed by a **skilled** worker using equipment operating in an **efficient** manner. There are two advantages of using standard times:

(i) They aim to *exclude past inefficiencies* and (ii) they aim to take into account *changes expected to occur in the budget period*. Similarly, Webb determines the standard quantity of square yards of cloth required by a **skilled** operator to make each jacket.

Standard **cost** per output unit for  
each variable direct-cost input

=

Standard **input** allowed  
for one output unit

X

Standard **price**  
per input unit

**A standard cost** is a carefully determined cost of a unit of output—for example, the standard direct manufacturing labor cost of a jacket at Webb.

**A standard input** is a carefully determined quantity of input—such as square yards of cloth or direct manufacturing labor-hours—required for one unit of output, such as a jacket.

**A standard price** is a carefully determined price that a company expects to pay for a unit of input. In the Webb example, the standard wage rate that Webb expects to pay its operators is an example of a standard price of a direct manufacturing labor-hour.

Standard direct material cost per jacket: 2 square yards of cloth input allowed per output unit (jacket) manufactured, at \$30 standard price per square yard

Standard direct material cost per jacket = 2 square yards \* \$30 per square yard = \$60

Standard direct manufacturing labor cost per jacket: 0.8 manufacturing labor-hour of input allowed per output unit manufactured, at \$20 standard price per hour

Standard direct manufacturing labor cost per jacket = 0.8 labor-hour \* \$20 per labor-hour = \$16



### Standard Costs versus a Standard Cost System<sup>(B)</sup>

It is useful to distinguish between standard costs and a standard cost system. The latter refers to an accounting system in which standard costs, and associated standard cost variances, are recorded in the formal accounting system. The flow of direct manufacturing costs in the accounting records is illustrated in section C.

#### Take a Note:

Note, however, that **standard costs can be used for control purposes outside of the formal accounting system**. That is, at the end of the accounting period accountants can compare actual and standard costs and analyze variances using the procedures discussed in the previous section of this chapter, regardless of whether standard costs are incorporated formally in the accounting system. <sup>(B)</sup>A standard-cost system can be used in job-order, process-costing, and activity-based systems to isolate variances.<sup>(GL)</sup>

#### Question

How are the words “budget” and “standard” related?

#### Answer

Budget is the broader term. To clarify, **budgeted** input prices, input quantities, and costs **need not be based on standards**.<sup>(H)</sup>

As we saw previously, they could be based on past data or competitive benchmarks, for example. However, when standards are used to obtain budgeted input quantities and prices, the terms “standard” and “budget” are used interchangeably.<sup>(H)</sup>

The standard cost of each input required for one unit of output is determined by the standard quantity of the input required for one unit of output and the standard price per input unit. See how the standard-cost computations shown previously for direct materials and direct manufacturing labor result in the budgeted direct material cost per jacket of \$60 and the budgeted direct manufacturing labor cost of \$16 referred to earlier.

In the long run, these costs should be the same. In the short run, however, they may differ because **standard costs represent what costs should be**, whereas **budgeted costs are expected actual costs**. Budgeted costs may vary widely from standard costs in certain months, but, for an annual budget period, the amounts should be similar.<sup>(GL)</sup>

A standard cost is an estimate of what a cost should be **under normal operating** conditions based on studies by accountants and engineers. <sup>(GL)</sup> The assumptions used, such as the number of direct labor hours allowed for each unit produced, **should be challenging but attainable under normal conditions**. If the standards are too rigorous, they will not be attained and the company will have large variances in its reporting that may cause inventory and cost of goods sold to be reported improperly.<sup>(HK)</sup>

### Four reasons for using standard costs are:

- (i) cost management, ex: standard costs can be used in costing inventory accounts,
- (ii) pricing decisions,
- (iii) budgetary planning and control, and
- (iv) financial statement preparation.





### Advantages of standard cost system

- Assists in performance evaluation.
- Allows employees to better understand what is expected of them.
- Permits development of **flexible budgeting**.

Note: A flexible budget is a budget that is prepared using the **standard costs** and the **actual level of activity**. Flexible budgets work with standard cost systems. The standard cost system provides data for the computation of the predetermined overhead rates to use in the flexible budget, for variance analysis of overhead expense, and for variance analysis of the direct inputs, which are direct materials and direct labor. (Variance analysis is covered in Section C.) <sup>(HK)</sup>

Another view is that it is based on cost formulas, or standard costs. Thus, the cost formulas are fed into the computerized budget program along with the actual level of sales or production. The result is a budget created for the actual level of activity. <sup>(GL)</sup>

### Setting Standard Costs

Setting price and quantity standards ideally combines the expertise of everyone who has responsibility for purchasing and using inputs. In a manufacturing setting, this might include accountants, purchasing managers, engineers, production supervisors, line managers, and production workers. Past records of purchase prices and input usage can be helpful in setting standards. However, the standards should be designed to encourage efficient *future* operations, not just a repetition of *past* operations that may or may not have been efficient. <sup>(G)</sup>

Firms have different expectations for the proper level at which to set their standards. Differences in expectations lead to two types of standards: **ideal**, and **currently attainable** standards. <sup>(B)</sup>

### Ideal/theoretical or perfection or maximum efficient/tight Standards

- Reflects maximum efficiency in every aspect of an operation.
- **Difficult, but not impossible, to achieve.**
- Assume **peak operating efficiency** and the **absence of any production disruptions**.
- ideal standards assume **perfection across all operations**.
- can lead to undue stress on employees that, in turn, may lead to **decreases in morale** and **ultimately decreases in productivity**. <sup>(B)</sup>
- **attained only under the best circumstances**. <sup>(G)</sup>
- Allow for **no machine breakdowns** or other work interruptions,
- and they call for a level of effort that can be attained only by the **most skilled and efficient employees working at peak effort** 100% of the time. <sup>(G)</sup>
- work into a continuous improvement strategy and total quality management philosophies. <sup>(IMA)</sup>

### Variances from ideal standards

Moreover, variances from ideal standards are difficult to interpret. Large variances from the ideal are normal and it is therefore difficult to “manage by exception.” <sup>(G)</sup> and so are **not practical for use in standard costs**, but they can be useful for some special analytical and decision-making purposes and as goals to strive for.





**Some** managers feel that such standards **spur continual improvement**. These managers argue that even though employees know they will rarely meet the standard, it is a constant reminder of the need for ever-increasing efficiency and effort.<sup>(G)</sup> they can have positive behavioral implications if workers are motivated to strive for excellence.

However, they are not in wide use because they can have negative behavioral effects if the standards are impossible to attain. Few organizations use ideal standards. Most managers feel that ideal standards tend to **discourage** even the most diligent workers.

As an alternative to the use of ideal standards, some organizations employ what are referred to as **continuous-improvement standards**. Such standards, as a **function of time** (e.g., months), become progressively **tighter** (i.e., more difficult to achieve). The use of this approach is somewhat analogous to the Japanese use of **kaizen** costing. Organizations that use ideal standards often modify performance evaluation and reward structures so that employees are not frustrated by frequent failures to attain the standards. Organizations can, for example, use progress toward an ideal standard rather than deviations from it as the primary benchmark in its performance-evaluation and reward system.<sup>(B)</sup> Ideal standards have been adopted by some companies that apply continuous improvement and other total quality management principles.<sup>(GL)</sup>

#### **Currently attainable (practical) standards costs/ “tight but attainable.”**

- sets the performance criterion at a level that a person with **proper training** and **experience** can attain most of the time without having to exert extraordinary effort.
- emphasizes normality and allows for some imperfections and inefficiencies.<sup>(B)</sup>
- allow for normal machine downtime and employee rest periods.<sup>(G)</sup>
- can be attained through reasonable, though highly efficient, efforts by the average worker. <sup>(G)</sup>
- achieved by reasonably **well-trained workers** with an allowance for **normal spoilage**, waste, and downtime.<sup>(GL)</sup>
- Serve as a better motivating target for manufacturing personnel.
- A currently attainable standard discourages continuous improvement because the workers are not motivated to perform better than they currently are performing continuous improvement is a key element in TQM.
- An alternative interpretation is that practical standards represent possible but difficult-to-attain results. <sup>(GL)</sup>

#### **Variances from practical standards**

Practical standards are the costs that are used in most standard costing systems, challenging to attain, but attainable under normal conditions and are incorporated into the flexible budget.

Variances from practical standards typically signal a need for management attention because they represent deviations that fall outside of normal operating conditions.<sup>(G)</sup>

**Most companies use practical expected standard costs in their standard cost system and in their flexible budgets.** If they choose not to do this, then management will have an additional variance to report; the variance between the practical expected costs and the Ideal theoretical costs.

**If standards are too tight, repeated failure to achieve them will reduce motivation. When standards are too loose, they represent an invitation to relax and provide little incentive to improve performance.**



## Selection of Standards

Which standards—*ideal or currently attainable*—should a firm use?

There is no single answer for all situations.

Firms struggling for survival in intensely competitive industries may choose to use ideal (or continuous-improvement) standards to motivate employees to put forth their best efforts.

Ideal standards are not effective, however, if frequent failures in meeting the standards discourage employees or lead them to ignore the standards.

Currently attainable standards, however, may have built into them some degree of inefficiency.

Allowing some inefficiencies is strategically unwise if the firm operates in an intensely competitive environment.

## Standard-Setting Procedures

In addition, line management is usually involved in the setting of standard costs as are quality control personnel. Top management would not be involved because cost estimation is a lower level operating activity. Participation by affected employees in all control systems permits all concerned to understand both performance levels desired and the measurement criteria being applied.<sup>(GL)</sup>

A firm can use either an authoritative or a participative procedure in setting standards. An **authoritative standard** is determined solely or primarily by management. In contrast, a **participative standard** calls, throughout the standard-setting process, for active participation of employees affected by the standard.

## Advantages <sup>(HK/B)</sup>

- ensure proper consideration of all operating factors,
- expedite the standard-setting process, than when more individuals are involved.
- management's expectations will be reflected in the resulting standard costs;
- ensuring total consistency across all functional areas.
- It is also far less complex and time-consuming than coordinating input from the middle and lower levels.

## Disadvantage

- affected employees will not see them as their own and will be less likely to accept them, which in turn will reduce their motivation to achieve the standards.<sup>(HK)</sup>

Firms using an authoritative process in standard setting, however, should keep in mind that a standard is useless if ignored by employees.

Using outside consultants setting the standards without participation from the involved employees could have potential consequences: consultant firms may not fully understand the company's manufacturing process, resulting in suboptimal performance, in addition employees could react negatively since they did not participate in setting the standards and there could be dissatisfaction if the standards contain costs which are not controllable by the unit held responsible.



### **A participative (grass-roots) standard-setting**

Involves all the employees who will be affected by the standard. When employees participate in setting the standards, they are more likely to accept them and not see them as unreasonable.

### **Advantages**

- Participation encourages employees to have a **sense of ownership** of the output of the process.
- The result is an **acceptance** of, and **commitment** to, the goals expressed in the budget.
- It provides a broader information base.
- Middle- and lower-level managers are often far **more informed** about operational realities than senior managers.
- Reduces the chance that employees will view the standard as **unreasonable** and increases the likelihood that they will buy into or adopt it as their own.

### **Disadvantage**

- resulting standards may not support achievement of the firm's strategic goals or operating objectives.<sup>(HK)</sup>
- costly in terms of time and money.
- the quality of participation is affected by the goals, values, beliefs, and expectations of those involved, but if a budget is to be used as a performance evaluator, a manager asked for an estimate may provide one that is **easily** attained.<sup>(GL)</sup>

Even when an authoritative standard-setting process is followed, production employees and supervisors must be involved in some aspects of the process. These people are close to the production process and their input is important if management expects to do a good job of setting the standards. The actual standard setting is accomplished through the efforts of management, product design engineers, industrial engineers, management accountants, production supervisors, purchasing, personnel, and employees affected by the standards.

### **Sources for Standards Setting**

Standard costs are derived from general standards for operations. Several resources are used in determining standards for operations. These are;

- Activity analysis,
- Historical data, and
- Benchmarking

### **Activity Analysis**

Activity analysis is the **most accurate way of determining standard costs**, If It Is properly executed.

- It Involves Identifying and evaluating all the Input factors and activities that are required to complete a job, a project or an operation efficiently.
- Activity analysis is performed by people from several different areas, including product engineers, industrial engineers, management accountants and the production workers.
  - Product engineers specify the components to be used in the manufacturing of a product.
  - Industrial engineers analyze the procedures required to complete the manufacturing process.Management accountants work with the engineers to complete the analysis.
- **Activity analysis “Team development approach”.**
  - incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management.



- The analysis specifies the quantity and the quality of the direct materials, the required skills and experience of the employees who will produce the product, and the equipment to be used in producing the product. The management accountants contribute the costs of the direct materials, the employees, the overhead and other items to arrive at the total standard cost.

### Historical Data

While activity analysis is the most accurate means to determine standard costs, the cost of the activity analysis itself can be prohibitively high. If a firm cannot justify the high cost of activity analysis, it can use historical data instead. Data on **costs involved in the manufacture of a similar product in prior periods** can be used to determine the standard cost of an operation, if accurate data is available. Analysis of historical data is much **less** expensive than activity analysis for determining standard costs.

However, a standard cost based on the past may perpetuate **past inefficiencies**. Furthermore, a standard based on the past **does not incorporate continuous improvements**, which are an important standard in the competitive environment in which businesses operate today.

### Benchmarking

- Benchmarking is the continuous process of comparing an organization's performance metrics with those of others in the same industry, or even of other industries. The goal is to set standards with an eye to those of the best-in-class organization.
- These other firms need not be in the same industry or country. If they have similar operations, they can offer good guidelines even if they are from a different industry or country. Benchmarking data can also come from associations of manufacturers that collect information from their members. In benchmarking, the best performance anywhere can be chosen as the attainable standard. Using the best performing company as a standard can help a firm maintain its competitive edge. However, the benchmark must be evaluated in light of the company's own unique situation.

- **Benchmarking standards can take the form of :**
  - the best performance of the unit in comparable past periods,
  - a comparison with a similar unit within the same company,
  - the best performance of a competitor with a similar operation

### Establishing Direct Materials Standards

Three considerations go into establishing a standard cost for direct materials;

- Quality,
- Quantity, and
- Price.

Specifying the **quality** is the first step, because the quality of the direct materials will affect all phases of production, such as the quantity of the materials that will be required, the time required for processing, and the amount of supervision that will be needed during the production process. The marketing department, engineering department, production department and management accountants all need to be involved in making the determination of the quality in order to assess the trade-offs that will be involved as well as determine the **optimum quality that will produce the lowest overall cost**.

The **quantity** standard is based upon the product design, the cost drivers of the manufacturing activities, the quality of the direct materials, and the condition of the plant and equipment that will be used to manufacture the product. The industrial engineering department, the production department and the management accountants work together to develop the quantity standard.



The **price** standard is developed after the quality and quantity standards, because the quality and quantity standards are considerations in setting the price standard. Timing of the purchases is a consideration, as well.

When the price takes a range with lowest and highest level the appropriate standard should be set at the price agreed upon by the purchasing manager and the appropriate level of company management. As those affected by the standards should participate in their establishment. Standards are more likely to be perceived as fair and accepted by employees who participate in the development process.

### **Establishing Direct Labor Standards**

The standard for direct labor depends on the type of work, the nature of the manufacturing process, the type of equipment that will be used, and the required skill level of the employee.

The **quantity** standard for direct labor is determined by the industrial engineers, the production department, the labor union, the personnel department, and the management accountants, using the factors listed above. In setting the company's standards for DL management should constantly revise standards to reflect learning curves. Time and motion studies are often used to determine standard costs.

The **price** standard for direct labor, or the standard wage rate, is provided by the personnel department and is a function of the competitive labor market and any labor contracts that may exist. The standard wage rate varies according to the type of employees needed and the skill level required.

Note: Learning curves are an established phenomenon. Workers learn a new task at a predictable rate and the resulting improvements in productivity should be factored into standard setting and variance analysis.<sup>(GL)</sup>



# Self Assessment Quiz





# CMA PROGRAM

## Examination Questions for Practice

Studying for and passing the CMA Exams is a mission that requires dedication and hard work.

- + Avoid studying CMA questions to learn the correct answers. Use questions to help you learn how to answer CMA questions under exam conditions. Expect the unexpected and be prepared to deal with the unexpected.
- + Become an educated guesser when you encounter questions in doubt; you will outperform the inexperienced exam taker.
- + FOCUS on why you selected the incorrect answer, NOT the correct answer.
- + You want to learn from your mistakes during study so you avoid mistakes on the exam.

### Reasons for missing questions include:

- 1) Misreading the requirement.
- 2) Not understanding what is required
- 3) Making a math error.
- 4) Applying the wrong rule or concept
- 5) Being distracted by one or more of the answers
- 6) Incorrectly eliminating answers from consideration
- 7) Not having any knowledge of the topic tested
- 8) Employing bad intuition when guessing

Never leave a multiple-choice question unanswered. Make your best educated guess in the time allowed. Remember that your score is based on the number of correct responses. You will not be penalized for guessing incorrectly.

### For each multiple-choice question,

- a. Try to ignore the answer choices. Do not allow the answer choices to affect your reading of the question.
  - 1) If four answer choices are presented, three of them are incorrect. These choices are called distractors for good reason. Often, distractors are written to appear correct at first glance until further analysis.
  - 2) In computational items-the distractors are carefully calculated such that they are the result of making common mistakes. Be careful, and double-check your computations if time permits.



## Quick Check IMA Questions

**Kallert Manufacturing currently uses the company's budget only as a planning tool. Management has decided that it would be beneficial to also use budgets for control purposes. In order to implement this change, the management accountant must**

- a) develop forecasting procedures
- b) synchronize the budgeting and accounting system with the organizational structure.
- c) organize a budget committee.
- d) appoint a budget director.

The correct answer is: synchronize the budgeting and accounting system with the organizational structure. Control is the process of monitoring the actions of those responsible for executing the plan, measuring the actions against the plan, and making the necessary corrections to the actions and/or the plan. Synchronizing the budgeting and accounting system with the organizational structure would allow management to use budgets for control purposes.

**The major disadvantage of a top-down budgeting process is**

- a) inconsistencies of goals with strategic plans.
- b) lack of buy-in by middle and lower-level management
- c) the introduction of budgetary slack.
- d) lack of involvement by upper-level management

The correct answer is: lack of buy-in by middle and lower-level management. In a top-down approach, upper-level management creates the budget and communicates goals to managers at lower levels. Two advantages of this method are lack of budgetary slack and consistency of goals with strategic plans. One disadvantage is lack of buy-in from lower-level managers.

**The budgeting technique that is most likely to motivate managers is**

- a) top-down budgeting.
- b) zero-base budgeting.
- c) bottom-up budgeting.
- d) incremental budgeting.

The correct answer is: bottom-up budgeting. Motivation is enhanced by having lower-level managers involved in the budgeting process. Bottom-up, participative budgeting promotes such involvement.

**Which one of the following best describes the role of top management in the budgeting process? Top management**

- a) needs to separate the budgeting process and the business planning process into two separate processes.
- b) should only be involved in the approval process.
- c) lacks the detailed knowledge of the daily operations and should limit their involvement.
- d) needs to be involved, including using the budget process to communicate goals.

The correct answer is: needs to be involved, including using the budget process to communicate goals. Top management is ultimately responsible for the organization's budget. To exercise this responsibility, top management ensures that all level of management understand and support the budgeting process and its relationship to control and performance measurement.



**Upper management has a morale problem with middle management. Many middle managers are getting poor performance appraisals, but these managers don't feel that they are to blame. Which of the following could best help this company out of their situation?**

- a) Separate uncontrollable costs from controllable costs and judge managers only on the latter.
- b) Base the performance appraisals upon only variable costs.
- c) Separate product costs from period costs and judge managers only on the former.
- d) Replace managers who get poor performance appraisals.

The correct answer is: Separate uncontrollable costs from controllable costs and judge managers only on the latter. Holding managers accountable for uncontrollable costs can be unmotivating. Controllable costs, on the other hand, are useful for performance evaluations and budgeting because managers perceive these as fair. Some fixed costs are controllable costs.

**A firm interested in implementing total quality management (TQM) should consider discontinuing the use of which of the following?**

- a) Ideal standards
- b) Currently attainable standards
- c) Controllable/uncontrollable cost segregation
- d) Benchmarking

The correct answer is: Currently attainable standards. A currently attainable standard discourages continuous improvement because the workers are not motivated to perform better than they currently are performing. Continuous improvement is a key element in TQM.



## CMA Exam Retired Questions

(1).1. All of the following are advantages of the use of budgets in a management control system **except** that budgets

- a. force management planning.
- b. provide performance criteria.
- c. promote communication and coordination within the organization.
- d. limit unauthorized expenditures.

(2).3. All of the following are criticisms of the traditional budgeting process **except** that it

- a. makes across-the-board cuts when early budget iterations show that planned expenses are too high.
- b. incorporates non-financial measures as well as financial measures into its output.
- c. overemphasizes a fixed time horizon such as one year.
- d. is not used until the end of the budget period to evaluate performance.

(3).5. The following sequence of steps are employed by a company to develop its annual profit plan.

\*Planning guidelines are disseminated downward by top management after receiving input from all levels of management.

\* A sales budget is prepared by individual sales units reflecting the sales targets of the various segments. This provides the basis for departmental production budgets and other related components by the various operating units. Communication is primarily lateral with some upward communication possible.

\* A profit plan is submitted to top management for coordination and review. Top management's recommendations and revisions are acted upon by middle management. A revised profit plan is resubmitted for further review to top management.

\* Top management grants final approval and distributes the formal plan downward to the various operating units.

This outline of steps **best** describes which one of the following approaches to budget development?

- a. Imposed budgeting by top management.
- b. Bottom-up approach.
- c. Top-down approach.
- d. Total justification of all activities by operating units.

(4).6. All of the following are advantages of top-down budgeting as opposed to participatory budgeting, **except** that it

- a. increases coordination of divisional objectives.
- b. reduces the time required for budgeting.
- c. may limit the acceptance of proposed goals and objectives.
- d. facilitates implementation of strategic plans.

(5).7. In developing the budget for the next year, which one of the following approaches would produce the **greatest** amount of positive motivation and goal congruence?

- a. Permit the divisional manager to develop the goal for the division that in the manager's view will generate the greatest amount of profits.
- b. Have senior management develop the overall goals and permit the divisional manager to determine how these goals will be met.
- c. Have the divisional and senior management jointly develop goals and objectives while constructing the corporation's overall plan of operation.
- d. Have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.

(6).8. Which one of the following is **not** an advantage of a participatory budgeting process?

- a. Coordination between departments.
- b. Communication between departments.
- c. Enhance employee motivation.
- d. Control of uncertainties



(7).10. Which one of the following statements concerning approaches for the budget development process is **correct**?

- a. The top-down approach to budgeting will not ensure adherence to strategic organizational goals.
- b. To prevent ambiguity, once departmental budgeted goals have been developed, they should remain fixed even if the sales forecast upon which they are based proves to be wrong in the middle of the fiscal year.
- c. With the information technology available, the role of budgets as an organizational communication device has declined.
- d. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget

(8).12. Helen Thomas, Amador Corporation's vice president of planning, has seen and heard it all. She has told the corporate controller that she is "....very upset with the degree of slack that veteran managers use when preparing their budgets." Thomas has considered implementing some of the following activities during the budgeting process.

- 1. Develop the budgets by top management and issue them to lower-level operating units.
- 2. Study the actual revenues and expenses of previous periods in detail.
- 3. Have the budgets developed by operating units and accept them as submitted by a company-wide budget committee.
- 4. Share the budgets with all employees as a means to reach company goals and objectives.
- 5. Use an iterative budgeting process that has several "rounds" of changes initiated by operating units and/or senior managers.

Which one of these activities should Amador implement in order to **best** remedy Thomas's concerns, help eliminate the problems experienced by Amador, and motivate personnel?

- a. 1 only.
- b. 2 and 3.
- c. 2 and 4.
- d. 2, 4, and 5.

(9).13. Budgeting problems where departmental managers are repeatedly achieving easy goals or failing to achieve demanding goals can be **best** minimized by establishing

- a. preventive controls.
- b. a policy that allows managers to build slack into the budget.
- c. participative budgeting where managers pursue objectives consistent with those set by top management.
- d. better communication whereby managers discuss budget matters daily with their superiors.

(10).15. Which one of the following items would **most** likely cause the planning and budgeting system to fail? The lack of

- a. historical financial data.
- b. input from several levels of management.
- c. top management support.
- d. adherence to rigid budgets during the year.

(11).16. All of the following are disadvantages of top-down budgeting as opposed to participatory budgeting, **except** that it

- a. may result in a budget that is not possible to achieve.
- b. may limit the acceptance of proposed goals and objectives.
- c. reduces the communication between employees and management.
- d. reduces the time required for budgeting.

(12).17. Suboptimal decision making is **not** likely to occur when

- a. there is little congruence among the overall organization goals, the subunit goals, and the individual goals of decision makers.
- b. goals and standards of performance are set by the top-management.
- c. guidance is given to subunit managers about how standards and goals affect them.
- d. the subunits in the organization compete with each other for the same input factors or for the same customers.



(13).18. All of the following statements concerning standard costs are correct **except** that

- a. time and motion studies are often used to determine standard costs.
- b. standard costs are usually set for one year.
- c. standard costs can be used in costing inventory accounts.
- d. standard costs are usually stated in total, while budgeted costs are usually stated on a per-unit basis.

(14).19. One approach for developing standard costs incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management. This approach would **best** be characterized as a(n)

- a. imposed approach.
- b. centralized top-down approach.
- c. engineering approach.
- d. team development approach.

(15).20. When compared with ideal standards, practical standards

- a. produce lower per-unit product costs.
- b. result in a less desirable basis for the development of budgets.
- c. incorporate very generous allowances for spoilage and worker inefficiencies.
- d. serve as a better motivating target for manufacturing personnel.

(16).21. Diana Stinson, Cherry Valley Inc.'s factory manager, had lost her patience. Six months ago, she had appointed a team from the production and service departments to finalize the allocation of costs and setting of standard costs. They were still feuding, and so she had hired Brennan and Rose, a large consulting firm, to resolve the matter. All of the following are potential consequences of having the standards set by Brennan and Rose **except** that

- a. Brennan and Rose may not fully understand Cherry Valley's manufacturing process, resulting in suboptimal performance.
- b. employees could react negatively since they did not participate in setting the standards.
- c. there could be dissatisfaction if the standards contain costs which are not controllable by the unit held responsible.
- d. the standards may appear to lack management support.

(17).22. Jura Corporation is developing standards for the next year. Currently XZ-26, one of the material components, is being purchased for \$36.45 per unit. It is expected that the component's cost will increase by approximately 10% next year and the price could range from \$38.75 to \$44.18 per unit depending on the quantity purchased. The appropriate standard for XZ-26 for next year should be set at the

- a. current actual cost plus the forecasted 10% price increase.
- b. lowest purchase price in the anticipated range to keep pressure on purchasing to always buy in the lowest price range.
- c. highest price in the anticipated range to insure that there are only favorable purchase price variances.
- d. price agreed upon by the purchasing manager and the appropriate level of company management.

(18).23. Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?

- a. Company A does not differentiate between variable and fixed overhead in calculating its overhead variances.
- b. Company B uses the prior year's average actual cost as the current year's standard.
- c. Company C investigates only negative variances.
- d. Company D constantly revises standards to reflect learning curves.





(19).24. After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be **inconsistent** with the consultant's conclusion?

- a. A review of performance reports revealed the presence of many unfavorable efficiency variances.
- b. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
- c. Management noted that minimal incentive bonuses have been paid in recent periods.
- d. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases on output being followed by rapid, sustained declines

(20).25. All of the following are examples of benchmarking standards **except**

- a. the performance of the unit during the previous year.
- b. the best performance of the unit in comparable past periods.
- c. a comparison with a similar unit within the same company.
- d. the best performance of a competitor with a similar operation.



## Answers CMA Exam Retired Questions

1. D
3. B
5. B
6. C
7. D
8. D
10. D
12. D
13. C
15. C
16. D
17. C
18. D
19. D
20. D
21. D
22. D
23. D
24. B
25. A



Section  
B.5

## Annual profit plan and supporting schedules

2015

### Content Specification Outlines

#### Part 1 – Section B.5.

#### 5. Annual profit plan and supporting schedules

- a. Operational budgets
- b. Financial budgets
- c. Capital budgets

### Learning Outcome Statements

#### Part 1 – Section B.5. Annual profit plan and supporting schedules

The candidate should be able to:

- a. explain the role of the **sales budget** in the development of an annual profit plan
- b. identify the **factors** that should be considered when preparing a sales forecast
- c. identify the components of a sales budget and prepare a sales budget
- d. explain the **relationship between the sales budget and the production budget**
- e. identify the role that **inventory levels** play in the preparation of a **production budget** and define other **factors** that should be considered when preparing a production budget
- f. prepare a production budget
- g. demonstrate an understanding of the **relationship between the direct materials budget, the direct labor budget, and the production budget**
- h. explain how **inventory levels** and procurement policies affect the direct materials budget
- i. prepare **direct materials and direct labor budgets** based on relevant information and evaluate the feasibility of achieving production goals on the basis of these budgets
- j. demonstrate an understanding of the **relationship between the overhead budget and the production budget**
- k. separate costs into their **fixed** and **variable** components
- l. prepare an **overhead budget**
- m. identify the components of the **cost of goods sold budget** and prepare a cost of goods sold budget
- n. demonstrate an understanding of **contribution margin per unit** and **total contribution margin**, identify the appropriate use of these concepts, and calculate both unit and total contribution margin
- o. identify the components of the **selling and administrative expense budget**
- p. explain how specific components of the selling and administrative expense budget may affect the contribution margin
- q. prepare an **operational (operating) budget**
- r. prepare a **capital expenditure budget**
- s. demonstrate an understanding of the **relationship between the capital expenditure budget, the cash budget, and the pro forma financial statements**
- t. define the **purposes of the cash budget** and describe the **relationship between the cash budget and all other budgets**
- u. demonstrate an understanding of the **relationship between credit policies and purchasing (payables) policies and the cash budget**
- v. prepare a **cash budget**



### The Annual/Master Budget or Profit Plan

The development of an annual profit plan for a large corporation may take many months to complete because the annual profit plan is made up of several different budgets, and some budgets cannot be developed until other budgets have already been completed.<sup>(HK)</sup>

The preparation of a complete organizational budget usually takes several months. A firm with a calendar year-end may start the budget process in September, anticipating its completion by the first of December.

The **budget planning calendar** is the schedule of activities for the development and adoption of the budget. It includes a list of dates indicating when specific information is to be provided to others by each information source. Because all of the individual departmental budgets are based on forecasts prepared by others and the budgets of other departments, it is essential to have a planning calendar to integrate the entire process

### The Master Budget

The master budget is the culmination and the goal of the budgeting process. The master budget is also called the comprehensive budget. The master budget is a summarized set of budgeted financial statements, including the budgeted balance sheet, budgeted income statement, and budgeted statement of cash flows.<sup>(HK)</sup>

The master budget is the document an organization relies on as it carries out its strategic plan to meet its goals. The master budget for the period is prepared following the budget guidelines; this is the organization's operating plan and budget.

The master budget is prepared for just **one planned activity level**, and the activity level is whatever is projected before the period begins.<sup>(HK)</sup>

The master budget is created using both **non-financial and financial assumptions**, which come about as a result of the planning process. For instance, companies develop budgets for the number of units of each product that they expect to manufacture and sell, the number of employees they will need, and so forth. The master budget is a result of both **operating decisions** and **financing decisions**. Operating decisions are concerned with the best use of the company's limited resources. Financing decisions are concerned with obtaining the funds to acquire the resources the company needs.

**Operating budgets** are used to identify the resources that will be needed to carry out the planned activities during the budget period, such as **sales**, services, **production**, **purchasing**, **marketing**, and **R&D** (research and development). The operating budgets for individual units are compiled into the **budgeted income statement**.<sup>(HK)</sup>

**Financial budgets** identify the sources and uses of funds for the budgeted operations. Financial budgets include the **cash budget**, **budgeted statement of cash flows**, **budgeted balance sheet**, and the **capital expenditures budget**.<sup>(HK)</sup>

### Development of the Master Budget

The master budget consists of two classifications: the operating budget and the financial budget.

#### The Operating Budget

The operating budget includes the income statement and all the budgets that support it, which will be detailed in the following pages, including:

- Sales budget
- Production budget
- Direct materials usage budget
- Direct materials purchases budget
- Direct labor budget
- Manufacturing overhead costs budget
- Ending inventories budget (finished goods and direct materials)
- Cost of goods sold budget
- Nonmanufacturing budget

#### The Financial Budget

The financial budget includes:

- Capital expenditures budget
- Cash budget
- Budgeted balance sheet
- Budgeted statement of cash flows



## The Operating Budget

The operating budget is the **budgeted income statement** and all the individual budgets that feed into it. We will take a look here at the individual budgets and what each is prepared for, as well as the order in which they are prepared.<sup>(HK)</sup>

### Steps in Preparing an Operating Budget

The best way to explain how to prepare an operating budget is by walking through the steps a company would take to do so. Most companies have a **budget manual** that contains a company's particular instructions and relevant information for preparing its budgets. Everyone involved in preparing the budget at all levels must be educated on the **detailed procedures** for preparing and submitting their part of the overall budget. Because of the number of component departments, budgets must be prepared in a standard format. Distribution instructions are vital because of the interdependencies of a, master budget. One department's budget may be dependent on another's, and functional areas must be aggregated from their constituent department budgets. The distribution instructions coordinate these interdependencies.

Although the details differ among companies, the following basic steps are common for developing the operating budget for a manufacturing company. Beginning with the revenues budget, each of the other budgets follows step-by-step in logical fashion.

Note: For the Exam, you may need to know the order in which the different budgets are prepared. Some of the questions may be based on the order of preparation. As you will see below, it is critical to produce the sales budget first so that the company knows how many units will need to be produced or purchased.

We next present the steps in preparing an operating budget for **Stylistic Furniture** for Aug/2012. Stylistic sells one model of granite-top coffee tables Deluxe. Revenue unrelated to sales, such as interest income, is zero.

Work-in-process inventory is negligible and is ignored.

Direct materials inventory and finished goods inventory are costed using the first-in, first-out (FIFO) method. Unit costs of direct materials purchased and unit costs of finished goods sold remain unchanged throughout each budget year but can change from year to year.

There are one type of direct materials: red oak (RO). Direct material costs are variable with respect to units of output—coffee tables.

Direct manufacturing labor workers are hired on an hourly basis; no overtime is worked.

Direct manufacturing labor-hours is the cost driver for the variable portion of manufacturing operations overhead. The fixed component of manufacturing operations overhead is divided to the manufacturing capacity planned for 2012.

For computing inventoriable costs, Stylistic allocates all (variable and fixed) manufacturing operations overhead costs using direct manufacturing labor-hours and the fixed component of manufacturing operations overhead is divided to the manufacturing capacity.

Nonmanufacturing costs consist of product design, marketing, and distribution costs.

All product design costs are fixed costs for 2012. The variable component of marketing costs equals the 14% sales commission on revenues paid to salespeople.

The following data are available for the 2012 budget:

**Direct materials** Two pounds of direct materials (Red Oak) are budgeted per unit at a cost of \$2.00 per pound, \$4.00 per unit. (same as in 2011)

Three direct labor-hours are budgeted per unit at \$7.00 per hour, \$21.00 per unit

Variable overhead is budgeted at \$8.00 per direct labor-hour, \$24.00 per unit.

Fixed overhead is budgeted at \$5,400 per month.

Variable nonmanufacturing costs are expected to be \$0.14 per revenue dollar.

Fixed nonmanufacturing costs are \$7,800 per year.



### Step 1: Prepare the Sales/Revenues Budget.

A revenues budget, calculated in Schedule 1, is the usual starting point for the operating budget. That's because the production level and the inventory level—and therefore manufacturing costs—as well as nonmanufacturing costs, generally depend on the forecasted level of unit sales or revenues.<sup>(H)</sup>

#### The first operating budget to be prepared is always the sales budget:

Manufacturing and service firms attain their desired goals through sales. Almost all activities of the firm emanate from efforts to attain sales goals and sales growth. For this reason, a **sales budget** often is regarded as the **cornerstone of the entire master budget** and in addition the **production budget** and **all the other budgets** for the company are derived from the sales budget.<sup>(HK)</sup>

- If sales are expected to be low, the company does not need as much inventory or as many sales people, and so on. On the other hand, if sales are expected to be high, more of each of these resources will be required.

#### The sales budget has three components:

- forecasted sales volume,
- forecasted sales mix, and
- budgeted selling prices.<sup>(B)</sup>

**The starting point in preparing a sales budget is the sales forecast.** An inaccurate sales forecast can render the entire budget a futile exercise and, when inaccurate, can impose costly expenses to the firm as well as to its suppliers.<sup>(B)</sup> Additionally, the sales budget needs to be based on realistic estimates of sales, since this budget will be the driver behind all of the remaining budgets. If the sales budget is too optimistic, production will be too high, inventory will be too high, and problems such as cash shortfall will result. If the sales budget is too low, production and inventory will be too low, and sales will be lost because of a lack of product to sell.<sup>(HK)</sup>

Sales forecasting by its nature is, in part, subjective. To reduce subjectivity in forecasts, many firms generate more than one independent sales forecast before preparing the sales budget for the period.

#### The following factors should be considered in sales forecasting:

- Current sales levels and sales trends of the past few years.
- General economic and industry conditions.
- Market research studies
- Competitors' actions and operating plans.
- Pricing policies.
- Credit policies.
- Advertising and promotional activities.
- Competition, and regulatory policies
- Unfilled back orders.

The sales budget is probably the **most difficult to produce** because it relies entirely on information and estimations that are outside of the direct control of the company. The company has no direct control over the economy as a whole or over competitors and technological advances that may make the company's product obsolete.<sup>(HK)</sup>

The sales budget will need to incorporate information about sales revenues expected from any capital projects that are expected to begin generating sales during the coming year.





## Schedule 1: Revenues Budget

For the Year Ending December 31, 2012

Units	Selling Price	Total Revenues
1,100	\$240	<u>\$264,000</u>

The revenues budget is often the result of elaborate information gathering and discussions among sales managers and sales representatives who have a detailed understanding of customer needs, market potential, and competitors' products. The usual starting point for Step 1 is to base revenues on expected demand. Occasionally, a factor other than demand limits budgeted revenues. For example, when **demand is greater than available production capacity** or a manufacturing input is in short supply, the revenues budget would be based on the **maximum units that could be produced**. Why? Because sales would be limited by the amount produced.<sup>(H)</sup> or find alternatives to satisfy the demand. **If the available capacity exceeds the budgeted production level**, the budget allows management ample time to find **alternative uses of the idle capacity** or to schedule other activities such as preventive maintenance and trial runs of new production processes. This ability to coordinate sales needs and production activities is another benefit of having a budget that allows firms to identify mismatches between capacity and output.

Now we have the inputs necessary to the formulation of the production budget

**Manufacturing Budgets**

Step 2: Prepare the Production Budget (in Units).

After revenues are budgeted, the manufacturing manager prepares the production budget, which is calculated in Schedule 2. The total finished goods units to be produced depend on budgeted unit sales and expected changes in units of inventory levels:

$$\begin{array}{rcccl} \text{Budget} & & \text{Budget} & & \text{Target ending} \\ \text{production} & & \text{sales} & & \text{finished} \\ \text{(units)} & = & \text{(units)} & + & \text{goods} \\ & & & & \text{inventory} \\ & & & & \text{(units)} \end{array} \quad - \quad \begin{array}{r} \text{Beginning} \\ \text{finished} \\ \text{goods} \\ \text{inventory} \\ \text{(units)} \end{array}$$

## Schedule 2: Production Budget (in Units)

For the Year Ending December 31, 2012

Budgeted unit sales (Schedule 1)	1,100
Add target ending finished goods inventory	<u>80</u>
Total required units	1,180
Deduct beginning finished goods inventory	<u>100</u>
Units of finished goods to be produced	<u>1,080</u>

Maintaining a **constant production level** enables the firm to keep a constant employment level. However, manufacturing excess units during slow periods **builds up inventory that is costly to hold**. The new manufacturing environment and increasing use of **just-in-time (JIT)** production-scheduling methods have led many companies to adjust production activity to changes in anticipated sales volume (and mix). JIT requires a **more flexible workforce** with broader skills to move the employee to the work center needed for immediate production. As well, JIT involves deploying relatively more temporary and contract laborers to match labor supply with the short-term demand for products and services.<sup>(B)</sup>

**Step 3: Prepare the Direct Material Usage Budget and Direct Material Purchases Budget.**

The number of units to be produced, calculated in Schedule 2, is the key to computing the usage of direct materials in quantities and in dollars. The direct material quantities used depend on the efficiency with which materials are consumed to produce a table. In determining budgets, managers are constantly anticipating ways to make process improvements that increase quality and reduce waste, thereby reducing direct material usage and costs.

Like many companies, Stylistic has a bill of materials, stored and updated in its computer systems. This document identifies how each product is manufactured, specifying all materials (and components), the sequence in which the materials are used, the quantity of materials in each finished unit, and the work centers where the operations are performed. For example, the bill of materials would indicate that 2 board feet of red oak are needed to produce each Deluxe coffee table. This information is then used to calculate the amounts in Schedule 3A.

**Schedule 3A: Direct Material Usage Budget in Quantity and Dollars  
For the Year Ending December 31, 2012**

**Material  
Red Oak**

**Physical Units Budget**

Direct materials required for Deluxe tables	2,160
(1,080 units * 2 b.f.)	
Total quantity of direct materials to be used	2,160

**Cost Budget**

Direct materials to be used this period	
(2,160 b.f.* \$2)	\$ 4,320

The purchasing manager prepares the budget for direct material purchases, calculated in Schedule 3B, based on the budgeted direct materials to be used, the beginning inventory of direct materials, and the target ending inventory of direct materials:

Purchases of direct materials	=	Direct materials used in production	+	Target ending inventory of direct materials	-	Beginning inventory of direct materials
-------------------------------------	---	--	---	--	---	--

Desired ending inventory equals 15% of the materials required to produce next month's sales. September sales are forecasted to be 1,600 units. What is the ending inventory in August? 480 pounds  
September sales:  $1,600 \times 2 \text{ pounds per unit} = 3,200 \text{ pounds}$ ,  $3,200 \times 15\% = 480 \text{ pounds}$  (the desired ending inventory), What is the beginning inventory in August?  $1,100 \text{ units} \times 2 \times 15\% = 330 \text{ pounds}$ .



**Schedule 3B: Direct Material Purchases Budget**  
**For the Year Ending December 31, 2012**

**Material**  
**Red Oak**

**Physical Units Budget**

To be used in production (from Schedule 3A)	2,160
Add target ending inventory	<u>480</u>
Total requirements	2,640
Deduct beginning inventory	<u>330</u>
Purchases to be made	2,310

**Cost Budget**

Red Oak: Unit purchase price	\$ <u>2.00</u>
Purchases	<u>\$4,620</u>

Step 4: Prepare the Direct Manufacturing Labor Costs Budget.

In this step, manufacturing managers use labor standards, the time allowed per unit of output, to calculate the direct manufacturing labor costs budget in Schedule 4. These costs depend on wage rates, production methods, process and efficiency improvements, and hiring plans.

Each unit requires 3 direct labor-hours at \$7.00 per hour.

**Schedule 4: Direct Manufacturing Labor Costs Budget**  
**For the Year Ending December 31, 2012**

	Output Units Produced (Schedule 2)	Direct Manufacturing Labor-Hours per Unit	Total Hours	Hourly Wage Rate	Total
Deluxe	1,080	3	3,240	\$7	<u>\$22,680</u>
Total			<u>3,240</u>		<u>\$22,680</u>

Step 5: Prepare the Manufacturing Overhead Costs Budget. As we described earlier, direct manufacturing labor-hours is the cost driver for the variable portion of manufacturing operations overhead and the fixed portion divided by the number of units produced.

For the 3,240 direct manufacturing labor-hours, Stylistic's manufacturing managers estimate various line items of overhead costs that constitute manufacturing operations overhead (that is, all costs for which direct manufacturing labor-hours is the cost driver). Managers identify opportunities for process improvements and determine budgeted manufacturing operations overhead costs in the operating department. They also determine the resources that they will need from the two support departments—kilowatt hours of energy from the power department and hours of maintenance service from the maintenance department. The support department managers, in turn, plan the costs of personnel and supplies that they will need in order to provide the operating department with the support services it requires. The costs of the support departments are then allocated (first-stage cost allocation) as part of manufacturing operations overhead.

Section D.3 describes how the allocation of support department costs to operating departments is done when support departments provide services to each other and to operating departments. The upper half of Schedule 5 shows the various line items of costs that constitute manufacturing operations overhead costs—that is, all overhead costs that are caused by the 3,240 direct manufacturing labor-hours (the cost driver).



The factory overhead budget includes all production costs other than direct materials and direct labor. The manufacturing overhead budget reflects the nature of overhead as a mixed cost, i.e., one that has a variable component and a fixed component. The total of these costs depends on how individual overhead costs vary with respect to the cost driver.

Unlike direct materials and direct labor, which tend to vary in direct proportion with the number of units manufactured, manufacturing overhead costs include costs that do not vary in direct proportion with the units manufactured but with the facilities the firm has and the way the production is performed.

1. Variable overhead contains those elements that vary with the level of production.
  - Indirect materials
  - Some indirect labor
  - Variable factory operating costs (e.g., electricity)
2. Fixed overhead contains those elements that remain the same regardless of the level of production.
  - Real estate taxes
  - Insurance
  - factory depreciation expenses and
  - Salaries of production supervisors.
3. Other costs of facilities and costs that vary with the batch size and number of setups in production.

### Classification in practice

Many firms separate the factory overhead budget into variable and fixed overhead items. All factory overhead costs other than those that vary in direct proportion to the units manufactured are treated as fixed costs. Such practices are justified because nonvariable factory overhead costs usually remain the same within a given range of production activities.

Data needed to prepare Overhead budget

Budgeting for factory overhead costs requires:

- forecasting the number of units to be produced,
- determining the way in which production is to be performed, and
- Incorporating factors that affect factory overhead.

Variable overhead is budgeted at \$8.00 per direct labor-hour.

Fixed overhead is budgeted at \$5,400 per month.

### Schedule 5: Manufacturing Overhead Costs Budget Manufacturing Operations Overhead Costs

Variable Overhead:

(3,240 × \$8.00)	\$25,920
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Fixed Overhead	<u>5,400</u>
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<b>Total</b>	<b>\$31,320</b>
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Step 6: Prepare the Ending Inventories Budget. The management accountant prepares the ending inventories budget, calculated in Schedules 6A and 6B. In accordance with generally accepted accounting principles, Stylistic treats both variable and fixed manufacturing overhead as inventoriable (product) costs. Stylistic is budgeted to operate at capacity. Manufacturing operations overhead costs are allocated to finished goods inventory at the budgeted variable rate of \$8 per direct manufacturing labor-hour (total budgeted manufacturing operations overhead, \$25,920 ÷ 3,240 budgeted direct manufacturing labor-hours).



**Schedule 6A: Unit Costs of Ending Finished Goods Inventory**  
**December 31, 2012**

**Cost per finished unit:**

Materials	\$ 4
Labor	21
Variable manufacturing overhead	24
Fixed manufacturing overhead	<u>5*</u>
Total	\$54

$$*\$5,400 \div 1,080 = \$5$$

**Schedule 6B: Ending Inventories Budget**  
**December 31, 2012**

	Quantity	Cost per Unit	Total
Direct materials			
Red Oak	480	\$2	\$960
Finished goods	80	\$54	<u>\$4,320</u>
Total ending inventory			\$5,280

What is the cost of the target ending inventory for materials?

$$480 \times \$2 = \$960$$

What is the cost of the target finished goods inventory?

$$80 \times \$54 = \$4,320$$

Step 7: Prepare the Cost of Goods Sold Budget. The manufacturing and purchase managers, together with the management accountant, use information from Schedules 3 through 6 to prepare Schedule 7.

**Schedule 7: Cost of Goods Sold Budget**  
**For the Year Ending December 31, 2012**

	From Schedule	Total
Beginning finished goods inventory, January 1, 2012	Given*	5,400
Direct materials used	3A \$4,320	
Direct manufacturing labor	4 22,680	
Manufacturing overhead	5 31,320	
Cost of goods manufactured		\$58,320
Cost of goods available for sale		\$63,720
Deduct ending finished goods inventory, December 31, 2012	6B	<u>\$4,320</u>
<b>Cost of goods sold</b>		<b><u>\$59,400</u></b>

Step 8: Prepare the Nonmanufacturing Costs Budget (Selling and General Administrative Expense Budget). Schedules 2 through 7 cover budgeting for Stylistic's production function of the value chain. For brevity, other parts of the value chain—product design, marketing, and distribution—are combined into a single schedule. Just as in the case of manufacturing costs, managers in other functions of the value chain build in process and efficiency improvements and prepare nonmanufacturing cost budgets on the basis of the quantities of cost drivers planned for 2012.

Product design costs are fixed costs, determined on the basis of the product design work anticipated for 2012 (\$1,560). The variable component of budgeted marketing costs is the commissions paid to sales people equal to 14% of revenues. The fixed component of budgeted marketing costs equal to \$6,240 is tied to the marketing capacity for 2012.

**Schedule 8: Nonmanufacturing Costs Budget (S,G&A)**

Business Function	Variable Costs	Fixed Costs	Total Costs
Product design		\$1,560	1,560
Marketing (Variable cost: $\$264,000 \times 0.14$ )	\$36,960	6,240	43,200
	<b><u>\$36,960</u></b>	<b><u>7,800</u></b>	<b><u>44,760</u></b>

Many selling and general administrative expenditures are the result of sales and marketing activities and programs. Firms are known to reduce or eliminate selling and administrative expenses to increase operating income for the period. For example, in an attempt to increase operating income and to show good control of operating expenses, the manager of a retail business proposes to decrease customer service expenditures by \$15 million from \$20 million to \$5 million. Although reduced customer services are likely to lead to decreases in sales, the budgeted total saving in expenditures exceeds the budgeted decrease in earnings for the year and the firm expects its budgeted operating income for the year to increase by \$11 million as a result. Decreases in customer services, however, will likely have negative effects on the firm's reputation as well as its future sales.<sup>(B)</sup>

In large organizations, this budget would be a compilation of many smaller, individual budgets submitted by department heads and other persons responsible for selling and administrative expenses. For example, the marketing manager would submit a budget detailing the advertising expenses for each budget period.<sup>(C)</sup>

Note: Each of the individual budgets prepared for expenses should be broken down into variable and fixed costs. This breakdown is significant because fixed costs cannot be changed. The breakdown is necessary in order to develop a flexible budget as well, since in a flexible budget variable items are adjusted to their equivalent values using actual activity while fixed items are unchanged. Also, the budgeted variable costs (particularly for overhead and selling and administration) are needed to determine the budgeted contribution margin from each business unit. The contribution margin is total revenue minus variable expenses.<sup>(Hk)</sup>

The nonmanufacturing budgets need to be developed in enough detail to be useful. The assumptions underlying the amounts in them should be documented for reference. When the first drafts of the budgets are revised, those documented assumptions will be needed in order to determine where changes can be made. For example, the budgeted employees and their salaries underlying the budgeted salaries and wages amount should be documented. If it is necessary to revise and cut budgeted salaries and wages, it will be much easier to make that revision if detail is available about the salaries and wages used to develop the first draft of the budget. <sup>(Hk)</sup>

After the operating budget is completed, the company can evaluate the expected profit for the upcoming period. This evaluation may be done using earnings per share, an industry average, or a price-earnings ratio. In addition, the budgeted net income becomes a part of the budgeted balance sheet through its effect on retained earnings in the equity section. <sup>(Hk)</sup>

Step 9: Prepare the Budgeted Income Statement. The CEO and managers of various business functions, with help from the management accountant, use information in Schedules 1, 7, and 8 to finalize the budgeted income statement, shown in Exhibit 6-3. The style used in Exhibit 6-3 is typical, but more details could be included in the income statement; the more details that are put in the income statement, the fewer supporting schedules that are needed for the income statement.

Budgeting is a cross-functional activity. Top management's strategies for achieving revenue and operating income goals influence the costs planned for the different business functions of the value chain. For example, a budgeted increase in sales based on spending more for marketing must be





matched with higher production costs to ensure that there is an adequate supply of tables and with higher distribution costs to ensure timely delivery of tables to customers.

### Budgeted Income Statement for Stylistic Furniture

Sales revenues	Schedule 1	\$264,000	100%
Less cost of goods sold	Schedule 7	59,400	22%
Gross margin		\$204,600	78%
Operating costs			
Product design	Schedule 8	1,560	
Marketing costs	Schedule 8	43,200	
		44,760	17%
Operating income		<u>\$159,840</u>	61%

## Financial Budgets

### Cash Budget

Cash Budget a table showing cash flows (receipts, disbursements, and cash balances) for a firm over a specified period.

The budget preparation process normally begins with the sales budget and continues through the preparation of pro forma financial statements. The last schedule prepared before the financial statements is the cash budget. The cash budget is the most important part of a company's budget program. The cash budget is a schedule of estimated cash collections and payments. The various operating budgets and the capital budget are inputs to the cash budgeting process. A cash budget may be prepared monthly or even weekly to facilitate cash planning and control. A cash budget is an example of a feedforward control because it anticipates cash needs and allows for the provision of resources to meet those needs.

#### Major sections in the cash budget

A cash budget generally includes three major sections:

1. Cash available
2. Cash disbursements
3. Financing

- The cash budget is a primary tool of short-run financial planning.
  - It allows the financial manager to identify short-term financial needs (and opportunities).
  - It will tell the manager the required borrowing for the short term.
  - It is the way of identifying the cash-flow gap on the cashflow time line.
  - The idea of the cash budget is simple: It records estimates of cash receipts and disbursements.
- We illustrate cash budgeting with the following example of Fun Toys.

- All of Fun Toys' cash inflows come from the sale of toys. Cash budgeting for Fun Toys starts with a sales forecast for the next year, by quarter:

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Sales (\$ millions)	\$100	\$200	\$150	\$100

- Fun Toys' fiscal year starts on July 1. Fun Toys' sales are seasonal and are usually very high in the second quarter, due to Christmastime sales.



- But Fun Toys sells to department stores on credit, and sales do not generate cash immediately. Instead, cash comes later from collections on accounts receivable. Fun Toys has a 90-day collection period, and 100 percent of sales are collected the following quarter.
  - In other words, Collections = Last quarter's sales
  - This relationship implies that
  - Accounts receivable at end of last quarter = Last quarter's sales

equation (27.5)

- We assume that sales in the fourth quarter of the previous fiscal year were \$100 million. From equation (27.5), we know that accounts receivable at the end of the fourth quarter of the previous fiscal year were \$100 million and collections in the first quarter of the current fiscal year are \$100 million.
- The first quarter sales of the current fiscal year of \$100 million are added to the accounts receivable, but \$100 million of collections are subtracted. Therefore, Fun Toys ended the first quarter with accounts receivable of \$100 million. The basic relation is
- End A/R = Starting A/R + Sales - Collection
- Table 27.3 shows cash collections for Fun Toys for the next four quarters. Though collections are the only source of cash here, this need not always be the case. Other sources of cash could include sales of assets, investment income, and long-term financing.

■ **TABLE 27.3 Sources of Cash (in millions)**

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Sales	\$100	\$200	\$150	\$100
Cash collections	100	100	200	150
Starting receivables	100	100	200	150
Ending receivables	100	200	150	100

- Next, we consider the cash disbursements. They can be put into four basic categories, as shown in Table 27.4.
- *Payments of Accounts Payable.*
  - These are payments for goods or services, such as raw materials.
  - These payments will generally be made after purchases. Purchases will depend on the sales forecast. In the case of Fun Toys, assume that
    - Payments = Last quarter's purchases
    - Purchases = 1/2 next quarter's sales forecast
- *Wages, Taxes, and Other Expenses.*
  - This category includes all other normal costs of doing business that require actual expenditures. Depreciation, for example, is often thought of as a normal cost of business, but it requires no cash outflow.
- *Capital Expenditures.*
  - These are payments of cash for long-lived assets. Fun Toys plans a major capital expenditure in the fourth quarter.
- *Long-Term Financing.*
  - This category includes interest and principal payments on longterm outstanding debt and dividend payments to shareholders.

**Cash Outflow****■ TABLE 27.4 Disbursement of Cash (in millions)**

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Sales	\$100	\$200	\$150	\$100
Purchases	100	75	50	50
Uses of cash				
Payments of accounts payable	50	100	75	50
Wages, taxes, and other expenses	20	40	30	20
Capital expenditures	0	0	0	100
Long-term financing expenses: interest and dividends	10	10	10	10
Total uses of cash	\$ 80	\$150	\$115	\$180

The total forecasted outflow appears in the last line of Table 27.4.

**The Cash Balance**

- The net cash balance appears in Table 27.5, and a large net cash outflow is forecast in the second quarter. This large outflow is not caused by an inability to earn a profit. Rather, it results from delayed collections on sales. This results in a cumulative cash shortfall of \$30 million in the second quarter.

**■ TABLE 27.5 The Cash Balance (in millions)**

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Total cash receipts	\$100	\$100	\$200	\$150
Total cash disbursements	80	150	115	180
Net cash flow	20	(50)	85	(30)
Cumulative excess cash balance	20	(30)	55	25
Minimum cash balance	5	5	5	5
Cumulative finance surplus (deficit) requirement	15	(35)	50	20

**Short-Term Financing Problem**

- Fun Toys had established a minimum operating cash balance equal to \$5 million to facilitate transactions, protect against unexpected contingencies, and maintain compensating balances at its commercial banks. This means that it has a cash shortfall in the second quarter equal to \$35 million.
- Fun Toys has a short-term financing problem.
  - It cannot meet the forecasted cash outflows in the second quarter from internal sources. Its financing options include:
    - (1) unsecured bank borrowing,
    - (2) secured borrowing, and
    - (3) other sources.



# Self Assessment Quiz



## CMA Exam Retired Questions

(1)47. CSO: 1A4a LOS: 1A4c

Netco's sales budget for the coming year is as follows.

Item	Volume in Units	Sales Price	Sales Revenue
1	200,000	\$50	\$10,000,000
2	150,000	10	1,500,000
3	300,000	30	9,000,000
Total sales revenue			<b><u>\$20,500,000</u></b>

Items 1 and 3 are different models of the same product. Item 2 is a complement to Item 1. Past experience indicates that the sales volume of Item 2 relative to the sales volume of Item 1 is fairly constant. Netco is considering an 10% price increase for the coming year for Item 1, which will cause sales of Item 1 to decline by 20%, while simultaneously causing sales of Item 3 to increase by 5%. If Netco institutes the price increase for Item 1, total sales revenue will decrease by

- a. \$1,050,000.
- b. \$850,000.
- c. \$750,000.
- d. \$550,000.

(2)48. CSO: 1A4a LOS: 1A4i

Hannon Retailing Company prices its products by adding 30% to its cost. Hannon anticipates sales of \$715,000 in July, \$728,000 in August, and \$624,000 in September. Hannon's policy is to have on hand enough inventory at the end of the month to cover 25% of the next month's sales. What will be the cost of the inventory that Hannon should budget for purchase in August?

- a. \$509,600.
- b. \$540,000.
- c. \$560,000.
- d. \$680,000.

(3)49. CSO: 1A4a LOS: 1A4f

Streeter Company produces plastic microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. How many units should Streeter produce in the second quarter?

- a. 72,000 units.
- b. 75,000 units.
- c. 78,000 units.
- d. 84,000 units.

(4)53. CSO: 1A4a LOS: 1A4f

Data regarding Rombus Company's budget are shown below.

Planned sales	4,000 units
Material cost	\$2.50 per pound
Direct labor	3 hours per unit
Direct labor rate	\$7 per hour
Finished goods beginning inventory	900 units



Finished goods ending inventory	600 units
Direct materials beginning inventory	4,300 units
Direct materials ending inventory	4,500 units
Materials used per unit	6 pounds

Rombus Company's production budget will show total units to be produced of

- a. 3,700.
- b. 4,000.
- c. 4,300.
- d. 4,600.

(5)61. CSO: 1A4a LOS: 1A4g

In preparing the direct material purchases budget for next quarter, the plant controller has the following information available.

Budgeted unit sales	2,000
Pounds of materials per unit	4
Cost of materials per pound	\$3
Pounds of materials on hand	400
Finished units on hand	250
Target ending units inventory	325
Target ending inventory of pounds of materials	800

How many pounds of materials must be purchased?

- a. 2,475.
- b. 7,900.
- c. 8,700.
- d. 9,300.

(6)62. CSO: 1A4a LOS: 1A4g

Playtime Toys estimates that it will sell 200,000 dolls during the coming year. The beginning inventory is 12,000 dolls; the target ending inventory is 15,000 dolls. Each doll requires two shoes which are purchased from an outside supplier. The beginning inventory of shoes is 20,000; the target ending inventory is 18,000 shoes. The number of shoes that should be purchased during the year is

- a. 396,000 shoes.
- b. 398,000 shoes.
- c. 402,000 shoes.
- d. 404,000 shoes.

(7)63. CSO: 1A4a LOS: 1A4g

Maker Distributors has a policy of maintaining inventory at 15% of the next month's forecasted sales. The cost of Maker's merchandise averages 60% of the selling price. The inventory balance as of May 31 is \$63,000, and the forecasted dollar sales for the last seven months of the year are as follows.

June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000





What is the budgeted dollar amount of Maker's purchases for July?

- a. \$355,500.
- b. \$360,000.
- c. \$364,500.
- d. \$399,000.

(8)78. CSO: 1A4b LOS: 1A4x

Prudent Corporation's budget for the upcoming accounting period reveals total sales of \$700,000 in April and \$750,000 in May. The sales cash collection pattern is 20% of each month's sales are cash sales.

5% of a month's credit sales are uncollectible.

70% of a month's credit sales are collected in the month of sale.

25% of a month's credit sales are collected in the month following the sale.

If Prudent anticipates the cash sale of a piece of old equipment in May for \$25,000, May's total budgeted cash receipts would be

- a. \$560,000.
- b. \$702,500.
- c. \$735,000.
- d. \$737,500

(9)81. CSO: 1A4b LOS: 1A4x

Health Foods Inc. has decided to start a cash budgeting program to improve overall cash management. Information gathered from the past year reveals the following cash collection trends.

40% of sales are on credit

50% of credit sales are collected in month of sale

30% of credit sales are collected first month after sale

15% of credit sales are collected second month after sale

5% of credit sales result in bad debts

Gross sales for the last five months were as follows.

January	\$220,000
February	240,000
March	250,000
April	230,000
May	260,000

Sales for June are projected to be \$255,000. Based on this information, the expected cash receipts for March would be

- a. \$230,000.
- b. \$237,400.
- c. \$242,000.
- d. \$243,200

(10)83. CSO: 1A4b LOS: 1A4x

Data regarding Johnsen Inc.'s forecasted dollar sales for the last seven months of the year and Johnsen's projected collection patterns are as follows.



Forecasted sales

June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

Types of sales

Cash sales 30%

Credit sales 70%

Collection pattern on credit sales (5% determined to be uncollectible)

During the month of sale 20%

During the first month following the sale 50%

During the second month following the sale 25%

Johnsen's budgeted cash receipts from sales and collections on account for September are

- a. \$635,000.
- b. \$684,500.
- c. \$807,000.
- d. \$827,000.



## Answers CMA Exam Retired Questions

- 47. A
- 48. B
- 49. C
- 53. A
- 61. C
- 62. D
- 63. C
- 78. C
- 81. C
- 83. B



## Top-level Planning and Analysis

### Pro Forma Financial Statements

#### Definition & Methods of preparation

The term **pro forma** is used to refer to a **forecasted/projected** financial statement prepared for a specific purpose (for example, to do “*what if*” analysis in the process of planning).

i.e. Financial statements containing projected amounts that are expected if a particular course of action is followed.

A company might prepare many different sets of pro forma financial statements for the same period in its planning process.

Pro forma financial statements are **not** prepared individually for each department and then consolidated into budgeted statements for the whole company the way budgeted financial statements are. They may be prepared for the company as a whole or for only one department or division.

Pro forma is a Latin phrase meaning “according to form.” It can be loosely translated to mean “as if.” Financial statements are referred to as pro forma when they reflect projected, rather than actual, results.

#### Timing of Pro Forma FS preparation

Pro forma statements may be prepared after the formal budget for the year has been adopted, if the company is considering an activity that was not foreseen before the formal budget was adopted.

#### Master Budget & Pro Forma Financial Statements

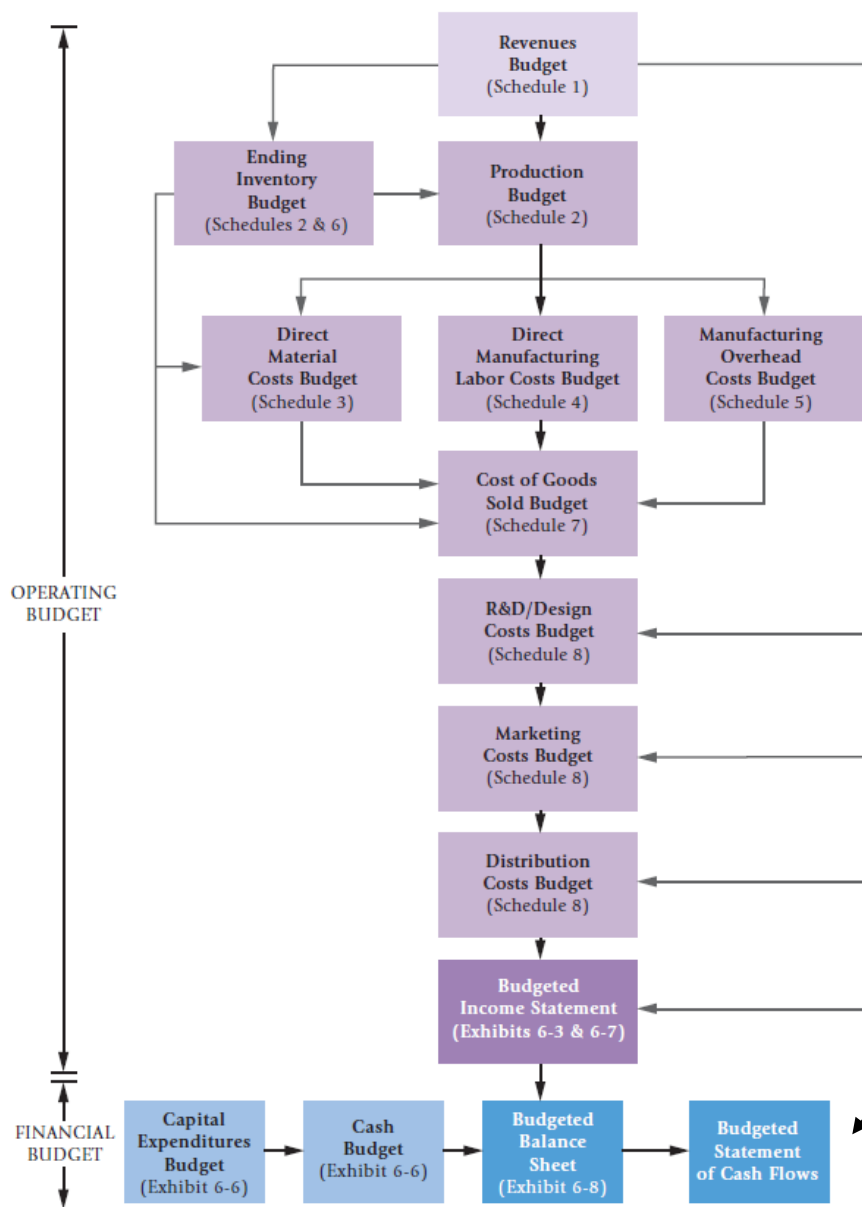
The master budget is **not** a pro forma financial statement. A pro forma financial statement is **not** used for formal variance reporting as the master budget and the flexible budget are, but in the meantime one or several versions of pro forma financial statements may be prepared as a part of the formal planning process that will eventually result in the master budget.

However, if an action that was forecasted is implemented, the company would probably want to compare the actual results with the forecasted, pro forma ones. But pro forma financial statements are **not** a part of the formal budgeting process. They are used for planning and decision-making purposes, and the amounts in them may be quite different from the amounts in the master budget.

The term “pro forma” is sometimes used to refer to the master budget financial statements as well, but this is an inappropriate use of the term. This text uses the term “pro forma” properly; however, be aware that “pro forma” might be used improperly elsewhere, possibly even on the exam.

#### Components of Pro Forma FS

- pro forma income statement,
- pro forma statement of financial position (balance sheet), and
- pro forma statement of cash flows.

**Interrelationships of Pro Forma Financial Statements**

After the income statement is complete, the company can prepare the pro forma balance sheet based on estimated dividends and information from the other operating budgets.

This will provide the company with projected solvency and liquidity figures for analysis purposes.

After the balance sheet and income statement are complete, the company can complete the pro forma cash flow statement.

**Note:**

Financial Budget represent the set of the financial statement based on the static/master budget assumption that can be used in "what if analysis".

The capital expenditures budget and the operating budgets combine to assess the cash needs of the organization. It is also necessary to gather information on the company's collection pattern and purchases (payables) pattern in order to determine when inflows and outflows can be expected based on the capital and operating budgets.



## Uses/Benefits of Pro Forma Financial Statements

### Uses Pro Forma FS

- *used* internally in the planning and decision-making purposes.
- *used* in order to see what the financial statements of the firm will look like if something that is under consideration or forecasted actually happens.
- *used* to evaluate the effects on the company's finances if a particular sales forecast is realized, although they can be used for other "what if" scenarios as well.
  - used for "what if" analysis in order to forecast the effect of a proposed change.
    - For example, if the company is contemplating a price increase that it anticipates will reduce the level of demand for its product, it will prepare a pro forma financial statement to determine the result on the financial statements if the price increase is put into effect.
- *used* to compare the company's anticipated performance with its target performance and with investor expectations.(management control).
- *used* to determine in advance what the company's future financing needs will be
- *used* to forecast the capital requirements of the plans in order to select the plan that maximizes shareholder value.
- *used* to determine whether the company will be able to remain in compliance with the required covenants on its long-term debt.

### Benefits of Pro Forma FS

By analyzing pro forma statements, managers can tell what the company's cash position will be, whether it will need to borrow, whether it will be able to make its scheduled loan payments, whether it will remain in compliance with debt covenants, and so forth.

The pro forma income statement *shows* a company's

- projected sales revenue,
- costs, and
- profit

derived from the individual *operating* budgets that previously discussed.

Pro forma income statement is used to

- decide whether the budgeted activities will result in an acceptable level of income.
  - If the initial pro forma income shows a loss or an unacceptable level of income, adjustments can be made to the component parts of the master budget.
- Other strategic objectives can also be observed from the pro forma income statement, such as
  - a target gross margin percentage and the interest coverage ratio (times interest earned).
  - The adequacy of earnings per share can also be observed from the pro forma income statement.

### Forecasting for Planning

#### Sales Forecasts

The sales forecast starts by looking back at historical trends and seeks to determine a pattern so that next year's sales can be predicted.

#### Percent of Sales Method (quicker way of forecasting year-end results)

After sales are forecasted, future financial statements must be forecasted. The most common method is the percent of sales method. Under this method, many items on the income statement and balance sheets are assumed to increase proportionately to sales. Other items may be based off historical data (i.e., interest expense may remain constant due to contracts previously entered into) or be based off forecasted net sales (i.e., cost of goods sold will be 60% of net sales).





The percentage-of-sales method is

- a simple approach that ties many of the items in the pro forma income statement and balance sheet to future sales revenue.
- It assumes that the relationship between these income statement and balance sheet items and sales revenue remains constant, which means that they grow proportionally with sales growth.

**The first financial statement forecasted is generally the income statement**

### EXAMPLE

LisaCo's Actual Year 5 and Projected Year 6 Income Statement  
(millions of dollars)

	Actual Year 5	Forecast Basis	Year 6 Forecast
Sales	\$4,000	1.11 x Year 6 sales	\$4,440
Cost of goods sold	(3,200)	80% of net sales	(3,552)
Gross margin	\$ 800		\$ 888
Selling and admin exp.	(300)	1.11 x Year 6 sales	(333)
Operating income	\$ 500		\$ 555
Other revenue	200	Same as last year	200
Earnings before interest and taxes (EBIT)	\$ 700		\$ 755
Earnings before taxes (EBT)	\$ 600		\$ 655
Taxes (40%)	(240)		(262)
Net income	\$ 360		\$ 393

### Analysis of Pro Forma Financial Statements

The following ratios will be used in analyzing pro forma financial statements:

#### Profitability Ratios (ICMA-2014)

- (1) Gross profit margin percentage = gross profit / sales
- (2) Operating profit margin percentage = operating income / sales  
Return on sales is equal to operating income divided by sales
- (3) Net profit margin percentage = net income / sales



22. Shoo Inc. owns several retail stores. After all initial budget requests were received for the upcoming year, Shoo's abbreviated pro forma income statement is as follows.

Sales	\$46,000,000
Cost of goods sold	20,700,000
Selling and administrative costs	19,800,000
Operating income	\$ 5,500,000

The cost of goods sold and a 5% sales commission are the only variable costs. Shoo's upper management believes that the sales manager underestimated projected sales units and wants the sales budget increased such that the company can achieve its goal of a 15% return on sales. The amount by which sales must increase to achieve this goal is

- a. \$4,000,000.
- b. \$3,500,000.
- c. \$1,750,000.
- d. \$1,400,000.

22. a

Return on sales is equal to operating income divided by sales. For every dollar added to sales, 45% will be the cost of goods sold ( $\$20,700,000 \div \$46,000,000$ ), and 5% will be sales commissions. Therefore, for every dollar that is added to sales, \$.50 is added to operating income. To find how much the sales budget must be increased by to raise the return on sales to 15%, algebra is the most appropriate tool, as follows:

$$\begin{aligned} [(\$5,500,000 + .5X) \div (\$46,000,000 + X)] &= .15 \\ (\$5,500,000 + .5X) &= .15 \times (\$46,000,000 + X) \\ \$5,500,000 + .5X &= \$6,900,000 + .15X \\ .35X &= \$1,400,000 \\ X &= \$4,000,000 \end{aligned}$$

After the pro forma statements have been compiled, they need to be analyzed to determine if the company is meeting its predetermined financial targets based on the estimates. The strategic objectives are defined prior to the formulation of the pro forma statements and are compared against the estimated results to determine if the company will meet goals if the estimates are achieved.

### Pro Forma Balance Sheet

a. The pro forma balance sheet is prepared using the cash and capital budgets and the pro forma income statement.

- 1) The pro forma balance sheet is the beginning-of-the-period balance sheet updated for projected changes in cash, receivables, payables, inventory, etc.
- 2) If the balance sheet indicates that a contractual agreement may be violated, the budgeting process must be repeated.
  - a) For example, some loan agreements require that owners' equity be maintained at some percentage of total debt or that current assets be maintained at a given multiple of current liabilities.

### Pro Forma Statement of Cash Flows

- a. The pro forma statement of cash flows is normally the last statement prepared.
- b. The pro forma statement of cash flows classifies cash receipts and disbursements depending on whether they are from operating, investing, or financing activities.
  - 1) The direct presentation reports the major classes of gross cash operating receipts and payments and the difference between them.
  - 2) The indirect presentation reconciles net income with net operating cash flow.



c. All the pro forma statements are interrelated (articulated), e.g., the pro forma cash flow statement will include anticipated borrowing. The interest on this borrowing will appear in the pro forma income statement.

**The percentage-of-sales method can be used to prepare**

- pro forma balance sheets and
- the statement of cash flows.

The pro forma income statements and balance sheets play a key role in determining the requirements for financing and dividend policy. If key line items on a balance sheet need to be maintained at a certain percentage of sales (i.e., cash 5% of sales, accounts receivable 15%, inventory 25%, and accounts payable 10%) in order to maintain company operations, management can derive the amount of funds available for dividends or the need for external financing.

To derive those numbers,

- the balance sheet items are set at the percentage of sales as defined, and
- retained earnings is computed from the beginning-of-year amount plus pro forma net income less estimated dividends,
- The long-term debt isn't expected to change with changes in sales.
- After the computations are made, there will be a shortfall either in assets or in liabilities and equity.
  - If assets are less than liabilities and equity, debt can be paid down or additional dividends can be paid.
  - If assets are higher than liabilities and equity, external financing is needed in order to support the asset base.

38. Golding Company has used the following data to prepare a pro forma income statement for the first quarter of next year. The company's effective income tax rate is 40%. The company's targeted gross margin percentage is 50%.

Sales	\$4,678,500
Beginning finished goods inventory	12,600
Ending finished goods inventory	18,900
Selling and administrative expenses	1,250,760
Cost of goods manufactured	2,445,790

Which one of the following is the **best** course of action?

- Since the pro forma gross margin percentage is lower than 50%, management should plan to lower the company's tax rate to improve next quarter's results.
- Since the pro forma gross margin percentage is higher than 50%, management should plan to follow the master budget to achieve the targeted results.
- Since the pro forma gross margin percentage is lower than 50%, management should plan to decrease manufacturing costs next quarter.
- Since the pro forma gross margin percentage is higher than 50%, management should plan to increase the sales price next quarter.

38. c

The gross margin percentage is 47.72%  $[(\$4,678,500 - \$2,445,790) \div \$4,678,500]$ . This is lower than the targeted gross margin percentage of 50%. If management decreases manufacturing costs, the gross margin percentage will increase.



23. Alton Machine Company has established a strategic initiative to increase operating income by increasing market share through being the lower cost provider. Assuming the total market size remains the same, and based on the information provided below, has Alton achieved the stated objectives?

	<u>Current year</u>	<u>Next year</u>
Revenues	\$325,000	\$325,000
Cost of goods sold	<u>152,000</u>	<u>146,000</u>
Gross margin	173,000	179,000
Operating costs		
Marketing	100,000	100,000
Administrative	<u>50,000</u>	<u>50,000</u>
Operating income	<u>\$ 23,000</u>	<u>\$ 29,000</u>
Units sold	1,000	1,000

- a. Yes, because Alton was able to lower costs and increase operating income.
- b. No, because Alton did not reduce marketing and administrative costs.
- c. Yes, because the statements show a reduced cost of goods sold.
- d. No, because it does not appear that Alton has increased market share.

23. d

81. Bolton Corporation manufactures goods that are sold by independent sales agents who receive a 20% payment based on sales value. Bolton's pro forma income statement for the upcoming year follows below.

Sales	\$15,000,000
Cost of goods sold (all variable)	6,000,000
Payment to sales agents	3,000,000
Other expenses (all fixed)	2,000,000
Operating income	\$ 4,000,000

After the budget was created, Bolton became aware that its primary competitors would each be raising their selling prices by 5%. If Bolton also increased its selling price by 5%, the company's revised operating income would be

- a. \$4,750,000.
- b. \$4,600,000.
- c. \$4,300,000.
- d. \$4,200,000.

81. b

Raising the selling prices by 5% would increase Bolton's revenue by \$750,000 ( $\$15,000,000 \times 0.05$ ). However, payments to sales agents increase by 5% as well, which results in a gain of \$150,000 ( $\$3,000,000 \times 0.05$ ). The net increase in operating income is therefore \$600,000, which makes the revised operating income \$4,600,000.



22. Tarleton Company operates several retail stores. To support the company's long-term goals, operating income should be at least 10% of sales. Tarleton's abbreviated pro forma income statement for next year is shown below.

Revenues	\$7,500,000
Cost of goods sold	3,750,000
Operating fixed costs	3,125,000
Operating income	\$ 625,000

The **best** action for Tarleton to take in order to meet its income goal is to

- a. increase the advertising budget by \$25,000 which would increase sales units by 5%.
- b. raise the selling price by 2% which would reduce sales units by 2% but save \$50,000 in operating costs.
- c. require all managers to reduce their budgeted operating fixed costs by 3%.
- d. wait until the end of next year's first quarter to re-evaluate its situation.

22. a

25. Bryan Corporation, a retailer, uses flexible budgeting as a planning tool. The company's original budget for the upcoming year is shown below.

Sales	\$90,000,000
Cost of goods sold	36,000,000
Administrative expenses (all fixed)	21,000,000
Advertising expense	9,000,000
Sales commissions	6,750,000
Other marketing expenses (all fixed)	9,250,000
Operating income	\$ 8,000,000

The manager of Bryan's Marketing Department believes sales volume will increase by 10% if the advertising budget is increased by \$5,000,000. Should Bryan approve the increased advertising request?

- a. Yes, because the increase in sales is \$4,000,000 greater than the increase in advertising costs.
- b. No, because advertising is 10% of sales so the maximum increase in sales would be \$900,000.
- c. Yes, because operating income would increase by \$400,000.
- d. No, because operating income would decrease by \$275,000.

25. d

### 2015 LOS

Define the purpose of a **pro forma** income statement, a pro forma balance sheet, and a pro forma statement of cash flows; and demonstrate an understanding of the relationship among these statements and all other budgets

Prepare **pro forma** income statements based on several revenue and cost assumptions

Evaluate whether a company has achieved strategic objectives based on pro forma income statements

Use financial projections to prepare a pro forma balance sheet and a pro forma statement of cash flows

Identify the factors required to prepare medium- and long-term cash forecasts

Use financial projections to determine required outside financing and dividend policy



# BUDGET METHODOLOGIES





## **MASTER BUDGET**

There are numerous types of budget systems that meet a variety of purposes. The most common budget system contemplates the development of the annual business plan or master budget, a budget that essentially anticipates the pro forma financial statements at a particular level of activity, so it is also called static budget.

Although the master budget is easy to understand because it deals with familiar concepts and formats, other budgetary systems have been developed to more effectively plan multi-year operations, identify and control costs, stimulates continuous improvement, or facilitate more refined performance evaluation.

*To use its budget as an effective planning and management tool, a company must choose a budget methodology that supports and reinforces its management approach.*

**Factors affecting the selection of budget methodology:** a company can choose different approaches in formulating its master budget.

- types of business,
- organizational structure;
- complexity of operations, and
- management philosophy,

**The company can even adopt different approaches for different pieces of its master budget, six common different budgeting systems that a company can use to create its budgets are:**

**Flexible budgeting** — serves as a control mechanism that evaluates the performance of managers by comparing actual revenue and expenses to the budgeted amount for the actual activities (and not the budgeted activities)

**Project budgeting** — used for creating a budget for specific projects or programs rather than for an entire company, such as the design of a new airliner or the building of a single ship.

**Continuous (or rolling) budgeting** — allows the budget to be continually updated(revised) by removing information for the period just ended (e.g., March of this year) and adding estimated data for the same period next year (e.g., March of next year).

**Kaizen budgeting** -The Japanese term kaizen means continuous improvement, and **kaizen budgeting** assumes the continuous improvement of products and processes. Accordingly, kaizen budgeting is based not on the existing system but on changes yet to be made.

**Activity-based budgeting (ABB)** — focuses on classifying costs based on activities rather than based on departments or products; ABB applies activity-based costing principles to budgeting. It focuses on the numerous activities necessary to produce and market goods and services and requires analysis of cost drivers.

**Zero-based budgeting (ZBB)**— starts each new budgeting cycle from scratch as though the budgets are prepared for the first time; ZBB is a budget and planning process in which each manager must justify his/her department's entire budget every budget cycle.

**Other types of budgets: (Incremental budgets)**



## I. ANNUAL BUSINESS PLANS (MASTER BUDGET OR COMPREHENSIVE BUDGET/ Profit Plan)

### A.GENERAL

Annual business plans (or master budgets) are sometimes referred to as profit planning or targeting budgets. Budgets of this character are based **one level of activity** and are, consequently also referred to as **static budgets**. A compilation of all the separate operational and financial budget schedules of the organization

#### 1. Purpose

Annual business plans are prepared to provide comprehensive and coordinated budget guidance for an organization.

#### 2. Appropriate Use

Annual business plans are appropriate for most industries but are particularly useful in manufacturing settings that require coordination of financial and operating budgets.

#### 3. Timeframe

Annual business plans summarize activity for a one-year period.

### B.MECHANICS OF ANNUAL PLAN BUDGETING

#### 1. Budget Components

The annual plan anticipates the coming year's activities that will contribute to the accomplishment of the long-term and short-term goals outlined in the company's strategic plan.

The master budget expresses management's operating and financial plans for a specified period (usually a year) and it **reflects the impact of both operating and financing decisions**.

- Operating decisions deal with the use of scarce resources.
- Financing decisions deal with how to obtain the funds to acquire those resources.

The previous two types of decisions covered by the budgetary components of the master budget as follows:

- a. Operating budget
- b. Financial budget

#### a. Operating budget

#### Interrelationships in the Master Budget

Exhibit 1-5 shows a diagram of the various parts of the master budget for a manufacturer firm. Most of what you see in Exhibit 1-5 comprises a set of budgets the budgeted income statement and its supporting budget schedules - together called the **operating budget**.

These schedules are budgets for various business functions of the value chain, from research and development to customer service.

The **financial budget** is that part of the master budget made up of the capital expenditures budget, the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows. A financial budget focuses on how operations and planned capital outlays affect cash. The master budget is finalized only after several rounds of discussions between top management and managers responsible for various business functions of the value chain.

**C.DEVELOPMENT OF AN ANNUAL PLAN**

This unit devotes a separate section to the development of the annual profit plan and supporting schedules and provides a comprehensive concept exercise that illustrates the steps required to develop an annual plan.

**D. BENEFITS AND LIMITATIONS OF THE MASTER BUDGET**

The benefits of having a master budget are numerous and the drawbacks are few. Virtually every company needs some form of master budget.

**1. Benefits**

Master budgets are relatively easy to prepare and are the most commonly developed budget system.

**2. Limitations**

Master budget amounts are confined to one year at a single level of activity.

**E.CONCEPT EXAMPLE**

The below example illustrates how the master (static) budget fail to be a control tool when the actual activity level deviate from the planned one in the master budget

**EXAMPLE:** A company has the following information for the period:

	Actual	Static Budget	Static Variance
Production in units	1,000	1,200	200 U
Direct materials (units × \$6)	\$ 6,000	\$ 7,200	\$1,200 F
Direct labor (units × \$10)	10,000	12,000	2,000 F
Variable overhead (units × \$5)	5,000	6,000	1,000 F
Total variable costs	\$21,000	\$25,200	\$4,200 F

From these results, it appears that, although the production manager failed to achieve his/her production quota, (s) he did a good job of cost control.

Contrast this with a **flexible budget**, which is a series of budgets prepared for many levels of activity.

At the end of the period, management can compare actual performance with the appropriate budgeted level in the flexible budget, so we have to prepare another budget **but based on the actual activity 1000 units**.

**II. FLEXIBLE BUDGETING****A.GENERAL****1. Purpose**

Flexible budgets represent adjustable to accommodate changes in actual activity.

**2. Appropriate Use**

Flexible budgets are most appropriate for a firm facing a significant level of uncertainty in unit sales volumes for next periods.

**B.MECHANICS OF FLEXIBLE BUDGETING****1. Budget Components**

Flexible budgets include consideration of revenue per unit, variable costs per unit, and total fixed costs over the relevant range. Flexible budgets also consider the amount of cost per unit allowed for units of output.



## C.DEVELOPMENT OF FLEXIBLE BUDGETING

- Flexible budgets represent a series of budgets that provide the ability to accommodate comparison with many levels of actual sales or production volume.

## D.BENEFITS AND LIMITATIONS OF THE FLEXIBLE BUDGETING

### 1. Benefits

- Flexible budgets can be displayed on any number of volume levels within the relevant range.
- Comparisons of actual and budgeted activity are **not distorted by mere volume differences** and can better pinpoint areas where efficiencies have been achieved or where waste has occurred, thus flexible budget allows management to focus on the variances that may be caused by production or administrative problems that need attention.
- Flexible budgets offer managers a **more realistic comparison** of budget and actual revenue and cost items under their control, i.e., control of direct labor and direct materials but not fixed factory overhead.

### 2. Limitations

- Flexible budgets are highly dependent on the accurate identification of fixed and variable costs and the determination of the relevant range.
- the potential for the firm to focus principally on the flexible budget level of output and disregard the fact that the sales target was missed.

## E.CONCEPT EXAMPLE

The Flex-o-matic Corporation produces the Flex -o-matic, a piece of exercise equipment. Corporate controller Felix Flexmeister is developing a flexible budget. Felix has already developed a master budget but estimates that the relevant range extends 20 percent above and below the master budget. What is the relevant range in dollars assuming a selling price of \$60 per unit variable costs of \$40 per unit, fixed costs of \$1 00,000 and anticipated output according to the master budget of 500 units?

	80% of <u>Master</u>	Master <u>Budget</u>	120% of <u>Master</u>
Sales	\$240,000	\$300,000	\$360,000
Variable costs	<u>(160,000)</u>	<u>(200,000)</u>	<u>(240,000)</u>
Contribution margin	80,000	100,000	120,000
Fixed costs	<u>(100,000)</u>	<u>(100,000)</u>	<u>(100,000)</u>
Operating income	\$ <u>(20,000)</u>	\$ <u>0</u>	\$ <u>20,000</u>

As per the previous example we note that a flexible budget provides cost allowances for different levels of activity, whereas a static budget provides costs for one level of activity.



Barnes Corporation expected to sell 150,000 board games during the month of November, and the company's master budget contained the following data related to the sale and production of these games:

Revenue	\$2,400,000
<b><u>Cost of goods sold:</u></b>	
Direct materials	675,000
Direct labor	300,000
Variable overhead	450,000



**Contribution margin**      **\$ 975,000**

Fixed overhead      250,000

Fixed selling      500,000

**Operating income**      **\$ 225,000**

Actual sales during November were 180,000 games. Using a flexible budget, the company expects the operating income for the month of November to be

- A. \$225,000
- B. \$270,000
- C. \$420,000
- D. \$510,000

Flexible budgets will be discussed in more depth in ch.7 (Performance Management (Variances)).

Answer (C) is correct.

### III. PROJECT BUDGETING (PROGRAM BUDGETING)

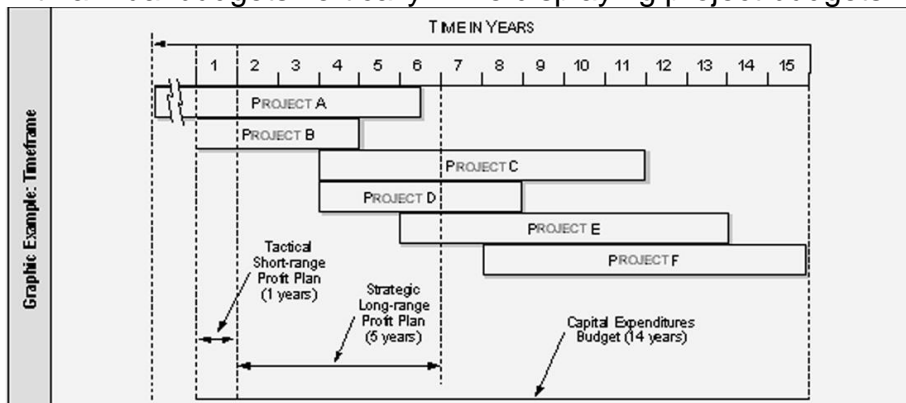
#### A. GENERAL

##### 1. Appropriate use

Project budgets are appropriate for specific tasks (e.g., construction of building, infrequent events such as discontinuation of a division or a product line, or groups of projects such as new product development, marketing, and refinement, the design of a new airliner or the building of a single ship).

##### 2. Timeframe

The time frame for a project budget is simply the duration of the project, but a multi-year project could be broken down by year. Timelines that display project budgets in coordination with annual budgets vertically while displaying project budgets horizontally.



#### B. BENEFITS AND LIMITATIONS OF THE PROJECT BUDGET

##### 1. Benefits

- Project budgets allow for a focused look at a particular project's resource requirements and timing & the ability to contain all of a project's costs so that its individual impact can be easily measured.

##### 2. Limitations

- If the budget process improperly done, project budgets may not afford a comprehensive look at the manner in which the project impacts the organization.



## V. CONTINUOUS (ROLLINGS) BUDGET

### A. GENERAL

#### 1. Purpose

- Initially is developed just like any other budgets. The difference is that instead of preparing, for example, an annual budget at the beginning of each year, the budget is **reviewed monthly** as time passes. The most recent period is dropped off and a new period at the end is added.
- Continuous (rolling or perpetual) budgets add a new budget month - rolls forward- (or quarter) as each current month (or quarter) expires. According to this model, budgeting becomes a perpetual process and *long-range planning* is performed continually rather than annually.

#### 2. Appropriate Use

- Continuous (rolling) budgets are most effective in **dynamic environments** where constant re-evaluation of products and activities are required by the market place or where results of activities are critical to operations

#### 3. Timeframe

Although a continuous (rolling) budget contemplates a year of activity, it usually does not coincide with the organization's fiscal period because it adds either a month or a quarter to the budget as each month or quarter is completed.

### B. BENEFITS AND LIMITATIONS OF CONTINUOUS (ROLLINGS) BUDGET

#### 1. Benefits

- Longer strategic perspective
- have up-to-date budgets because the preparation of a budget for a new quarter or month often leads to revision of the existing budget.
- requires managers to always be thinking ahead.
- continuous budget is more relevant than a budget prepared once a year. It can reflect current events and changes in its estimates, and
- it has the advantage of breaking down a large process into manageable steps.

#### 2. Limitations

- the amount of time managers must constantly spend on budget preparation
  - can be weakened by incomplete analysis.
- the need to have a budget coordinator and/or the opportunity cost of having managers use part of each month working on the next month's budget.





## VII. KAIZEN (CONTINUOUS IMPROVEMENT) BUDGETING

### A. GENERAL

#### 1. Purpose

- explicitly demands continuous improvement and incorporates all expected improvements in the resulting budget.
- Kaizen budgeting process bases budgets on the desired future operating processes rather than the continuation of the current practices as is often the case in traditional budgeting.
- Kaizen budgeting assumes innovation and high performance not only from the organization but also from its suppliers.

#### 2. Appropriate Use

- Kaizen is often used in highly competitive manufacturing environments where continuous improvement of products and manufacturing processes are necessary to ensure strategic position and survival.

### B. DEVELOPMENT OF KAIZEN (CONTINUOUS IMPROVEMENT) BUDGETING

- Kaizen budgeting begins by analyzing current practices to identify areas for improvement and determine expected changes needed to attain the desired
- improvement(s). then budgets are prepared based on improved practices or procedures.
- As a result, **budgeted costs often are lower than those in the preceding period.**
- Kaizen budgeting is not limited to internal improvements. Many firms expect and demand continuous improvements of their **suppliers** and explicitly incorporate consequent effects on costs and delivery schedules of parts and components in budgeted production cost and manufacturing schedules.
- A kaizen budget decrease is ***not*** the same as the budget cuts we often see firms or governments make when facing a budget crunch because of diminishing profits, decreasing sales, or declining tax revenues.
- Much of the cost reduction associated with kaizen budgeting arises from **many small improvements rather than "quantum leaps."**
- A significant aspect of kaizen budgeting is the quantity and quality of employees' suggestions.
- A decrease in cost in a kaizen budget is a result of performing the same activity **more efficiently and with higher quality**; it is not a result of arbitrarily eliminating activities or components.

### C. BENEFITS AND LIMITATIONS OF KAIZEN (CONTINUOUS IMPROVEMENT) BUDGETING

#### 1. Benefits

Kaizen budgets keep managers continuously in search of improved cost and value

#### 2. Limitations

Kaizen budgets can be discouraging to managers and suppliers and focus on cost rather than value.



## VIII. ACTIVITY BASED BUDGETING (ABB)

### A.GENERAL

#### 1. Purpose

Activity-based budgeting (ABB) is a budgeting process that focuses on costs of activities or cost drivers necessary for operations instead of departments or products. Each activity is matched with the most appropriate cost driver, which is any volume-based or activity-based unit of measurement of the cost of a job or activity needed to sustain operations. The time frame is usually short term but continuous.

#### 2. Appropriate use

ABB is most appropriate in businesses that have complexity in their number of products, number of departments, or other factors such as setups. **Timeframe** Activity based budgeting is generally applied to annual time periods or less.

### B. DEVELOPMENT OF ACTIVITY BASED BUDGETING (ABB)

Development of an activity based budget involves a number of specifically identifiable discrete steps discussed in depth in U.5.

### C. BENEFITS AND LIMITATIONS OF ACTIVITY BASED BUDGETING (ABB)

#### 1. Benefits

Greater precision in determining costs, Activity-based budget-Proponents believe that traditional costing obscures the relationships between costs and outputs by oversimplifying the measurements into such categories as labor hours, machine hours, or output units for an entire process or department. Instead of using only volume drivers as a measurement tool, an activity-based budget uses activity based cost drivers, such as number of setups, to make a clear connection between resource consumption and output.

#### 2. Limitations

Although this may provide greater precision in determining costs, a potential drawback can occur if the cost of designing and maintaining the system exceeds the cost savings from better planning.

## IX. ZERO-BASED BUDGETING

### A.GENERAL

#### 1. Purpose

- budgeting process that requires **justification of all expenditures every year**, i.e., requires managers to prepare budgets from ground zero.
- Many budget systems are referred to as incremental budgets because they assume that previous budgets represent required levels of effort and need only be adjusted for additional or incremental expenses. Zero-based budgets are designed to challenge that assumption and require that manager begin the budget process from zero.
- Thus, managers must conduct **in-depth reviews** and analyses of all budget items and of each area under their control to provide such **justification**.



- Such a budgeting process encourages managers to be aware of activities or functions that have outlived their usefulness or have been a waste of resources. A tight, efficient budget often results from zero-base budgeting.

## C.DEVELOPMENT OF ZERO-BASED BUDGETING

- The first step in developing a zero-based budget is to have each department manager **rank** all of its activities from most to least important and assign a cost to each activity. This step requires determination of objectives, operations, and costs for each activity and the alternative means of carrying out that activity.
- For each budgetary unit, a **decision package** (lists of budgeted activities) is prepared that describes various levels of service that may be provided, including at least one level of service lower than the current one.
- Upper management asks questions, such as
  - "Should the activity be performed?"
  - If it is not, what will happen?" or "Are there substitute methods of providing this function, such as outsourcing or customer self-service?"
- Upper management reviews these lists (decision packages), and cuts items that lack justification or are less critical.
- Benchmarks and standards can be used to develop the budget figures instead of just relying on historical numbers.
- In other words ZBB divides the activities of individual responsibility centers into a series of packages that are prioritized.

## D. BENEFITS AND LIMITATIONS OF ZERO-BASED BUDGETING

### 1. Benefits

- ZBB forces review of all elements of a business.
- Focusing on every line item instead of just the exceptions.
- should motivate managers to identify and remove items that are more costly than the benefits provided.

### 2. Limitations

- it can require a nearly impossible amount of work to review all of a company's activities every year.
- Thus ZBB is time-consuming and expensive annual review process as a result the review often is less thorough than it should be.

### Alternatives

As an alternative, many organizations schedule zero-base budgeting periodically or perform zero-base budgeting for different divisions each year.

The time and expense of a zero-based budget is often mitigated by performing zero- based budgets only on a periodic basis, such as **once every five years**, and applying a different budget method in the other years. Or, the firm might rotate the use of zero- based budgeting for a different division each year.



## X. OTHER TYPES OF BUDGETS

### A. INCREMENTAL BUDGET

An incremental budget is a general type of budget that starts with the prior year's budget and uses projected changes in sales and the operating environment to adjust individual items in the budget upward or downward. It is the opposite of a zero-based budget. The main drawback to using this type of budget (and the reason that some companies use zero-based budgets) is that the budgets tend to only increase in size over the years.

An advantage of incremental budgeting when compared with zero-based budgeting is that incremental budgeting accepts the existing base as being satisfactory. i.e., offers to managers the advantage of requiring **less managerial effort** to justify changes in the budget.

### B. LIFE CYCLE BUDGET

A life-cycle budget estimates a product's revenues and expenses over its entire life cycle beginning with initial research and development and ending with the withdrawal of customer support (i.e., cradle –to-grave budgeting). Life-cycle costing discussed in more depth in U.5



# Self Assessment Quiz



## CMA Exam Retired Questions

(1)40. CSO: 1A3a LOS: 1A3b

Many companies use comprehensive budgeting in planning for the next year's activities. When both an operating budget and a financial budget are prepared, which one of the following is **correct** concerning the financial budget?

	Capital Budget	Pro-forma Balance Sheet	Cash Budget
a.	Yes	No	Yes.
b.	No	Yes	No.
c.	Yes	Yes	Yes.
d.	No	No	No.

(2)41. CSO: 1A3a LOS: 1A3b

What would be the correct chronological order of preparation for the following budgets?

- I. Cost of goods sold budget.
- II. Production budget.
- III. Purchases budget.
- IV. Administrative budget.

- a. I, II, III, IV.
- b. III, II, IV, I.
- c. IV, II, III, I.
- d. II, III, I, IV.

(3)42. CSO: 1A3a LOS: 1A3c

Which one of the following **best** describes the order in which budgets should be prepared when developing the annual master operating budget?

- a. Production budget, direct material budget, revenue budget.
- b. Production budget, revenue budget, direct material budget.
- c. Revenue budget, production budget, direct material budget.
- d. Revenue budget, direct material budget, production budget.

(4)43. CSO: 1A3d LOS: 1A3a

A budgeting approach that requires a manager to justify the entire budget for each budget period is known as

- a. performance budgeting.
- b. program budgeting.
- c. zero-base budgeting.
- d. incremental budgeting.

(5)46. CSO: 1A3f LOS: 1A3a

Country Ovens is a family restaurant chain. Due to an unexpected road construction project, traffic passing by the Country Ovens restaurant in Newtown has significantly increased. As a result, restaurant volume has similarly increased well beyond the level expected. Which type of budget would be **most** appropriate in helping the restaurant manager plan for restaurant labor costs?

- a. Zero-based budget.
- b. Rolling budget.
- c. Activity-based budget.
- d. Flexible budget.





7. The type of budget that is available on a continuous basis for a specified future period by adding a month, quarter, or year in the future as the month, quarter, or year just ended is deleted, is called a
- rolling budget.
  - kaizen budget.
  - activity-based budget.
  - flexible budget.
8. In the budgeting and planning process for a firm, which one of the following should be completed first?
- Sales budget.
  - Financial budget.
  - Cost management plan.
  - Strategic plan.
10. In preparing a corporate master budget, which one of the following is most likely to be prepared last?
- Sales budget.
  - Cash budget.
  - Production budget.
  - Cost of Goods Sold budget.



## Answers CMA Exam Retired Questions

- 40. C
- 41. D
- 42. C
- 43. C
- 46. D
- 7.a
- 8. d
- 10. b



# Forecasting Techniques



## Forecasting techniques

Forecasting is a critical part of any business, and it involves looking into the future and attempting to determine what future conditions and/or results will be. Forecasts are the basis for business plans. Forecasts are used to project product demand, inventory levels, cash flow, etc. A budget is a form of forecasting. Forecasting methods are both Qualitative methods and Quantitative methods, Qualitative methods of forecasting rely on the manager's experience and intuition (NOT TESTED).

## Forecasting techniques:

### A. Quantitative Forecasting Methods

- Causal forecasting methods (Regression Analysis)
- Time Series Smoothing methods
  - ✓ Moving Average,
  - ✓ Weighted Moving Average,
  - ✓ Exponential smoothing

### B. Learning Curves

### C. Expected Value

## A. Quantitative Forecasting Methods

- I. **Causal forecasting methods (Regression Analysis)** which look for a cause-and-effect relationship between the variable we are trying to forecast (the **dependent variable**) and one or more other variables (the **Independent variables**).
- II. **Time Series methods:** which look only at the historical pattern of one variable and generate a forecast by extrapolating the pattern using one or more of the **components** of the time series.
  - ✓ Smoothing (Moving Average, Weighted Moving Average, Exponential smoothing)

## I. Causal Forecasting: Regression analysis (least-squares analysis)

Causal forecasting methods are used when the value that we are forecasting can be determined to be affected by some other value. If we can identify a **cause and effect relationship** between what we are forecasting and the other value, and if that relationship is a linear one, we can use a projection of the other value to forecast the value we are interested in.

### A regression equation estimates the dependent variables.

Regression analysis is used to find an equation for the linear relationship among variables. The behavior of the dependent variable is explained in terms of one or more independent variables. Regression analysis is often used to estimate a dependent variable (such as cost) given a known independent variable (such as production).

## Simple Linear Regression

If there is only one independent variable and one dependent variable and the relationship between them is linear, regression analysis is called **simple linear regression**.

## Two basic assumptions of simple Regression Analysis

- 1) Changes in the value of the dependent variable can be explained by changes in the level of the independent variable; and
- 2) The relationship between the dependent variable and the independent variable is linear within the relevant range.

**The simple regression equation**

$$Y = a + b X$$

**Y** = value of the dependent variable, estimated cost

**a** = a fixed quantity, the intercept, that represents the value of Y when X = 0

**b** = the unit variable cost, the coefficient of the independent variable measuring the increase in Y for each unit increase in X (the slope)

**X** = value of the independent variable, the cost driver

Regression analysis is almost a necessity for computing the fixed and variable portions of mixed costs for flexible budgeting.

**Example:**

<u>Month</u>	<u>Supplies Expense (Y)</u>	<u>Production Level (X)</u>
1	\$250	50 units
2	310	100 units
3	325	150 units
4	?	125 units

**Y** = value of the dependent variable, estimated cost of Supplies Expense

**a** = a fixed quantity, assume Fixed cost =\$220

**b** = the unit variable cost, assume variable cost per unit= **\$.75**

**X** = value of the independent variable, the cost driver, 125 units

Regression analysis will enable us to predict the amount of supplies expense for month four

$$Y = a + bX + e$$

$$Y = \$220 + \$.75 \text{ per unit} \times 125 \text{ units}$$

$$Y = \$313.75 \quad \text{Expense estimate for month 4}$$

**Correlation analysis****Coefficient of correlation R**

Correlation is the strength of the linear relationship between two variables, expressed mathematically in terms of the coefficient of correlation (r).

The **coefficient of correlation** measures the relative strength of the linear relationship. r ranges from 1 (perfect direct relationship) to -1 (perfect inverse relationship).  $\{-1.0 < r < 1.0\}$ .

- ✓ A value of -1.0 indicates a perfectly inverse linear relationship between x and y.
- ✓ A value of zero indicates no linear relationship between x and y.
- ✓ A value of +1.0 indicates a direct relationship between x and y.

**Coefficient of determination R-squared** (coefficient of correlation squared):

A number between zero and one that describes the explanatory power of the regression (the degree to which the change in Y can be explained by changes in X)

The maximum value for  $R^2$  is 1.00 (i.e., 100%)

If the coefficient of determination, or  $r^2$ , is low, it may mean that we are using the wrong independent variable in our analysis. The coefficient of determination ( $r^2$ ) measures the percentage of the **total variance** in cost that can be explained by the regression equation.

**EXAMPLE:** A car dealership determines that new car sales are a function of disposable income with a coefficient of correlation of .8. This is equivalent to stating that 64% ( $.8^2$ ) of the variation of new car sales from the average can be explained by changes in disposable income.



### **T-value**

The t-value measures the reliability of each independent variable, which is the degree to which the independent variable has a valid, long-term relationship with the dependent variable.

### **Standard error of the estimate (SE)**

A measure of the accuracy of the regression's estimate. SE can be compared to the average size of the dependent variable. If the SE value is relatively small compared to the value of the dependent variable, the regression model can be viewed as relatively "good"

### **Multiple Regression Analysis**

However, it is also possible for one dependent variable (for example, sales) to be affected by more than one independent variable (for example, advertising expenditures, size of the sales staff, competition, the economy and any number of other possible causes). When there is more than one independent variable, the regression analysis is called **multiple regression analysis**.

## **Benefits and Limitations of Regression Analysis**

### **The benefits or advantages of regression analysis are:**

- Regression analysis is a quantitative method and as such, it is objective. A given data set generates a specific result. That result can be used to draw conclusions and make forecasts.
- Thus, regression analysis is an important tool for use in budgeting and cost accounting. In budgeting, it is virtually the only way to compute fixed and variable portions of costs that contain both fixed and variable components (**mixed costs**).

### **The shortcomings or limitations of regression analysis are:**

- To use regression analysis, historical data is required for the variable that we are forecasting or for the variables that are causal to this variable. If historical data is not available, regression analysis cannot be used.
  - Even when historical data is available, if there has been a significant change in the conditions surrounding that data, its use is questionable for predicting the future.
  - analysis are valid only for the range of data in the sample
  - In causal forecasting, the usefulness of the data generated by regression analysis depends upon the choice of independent variable (s). If the choice of independent variable (s) is inappropriate, the results can be misleading.
-





## II. Time Series Methods

- **Time series data** reflects activity for one variable – an organization, plant, activity, or one expense classification – over a sequence of past time periods.
- A **time series method of forecasting** uses only these historical values in an attempt to find (discover) a pattern in them that can be used in forecasting the future. Only that one set of historical time series data is used in time series analysis and that historical data is not compared to any other set of data.

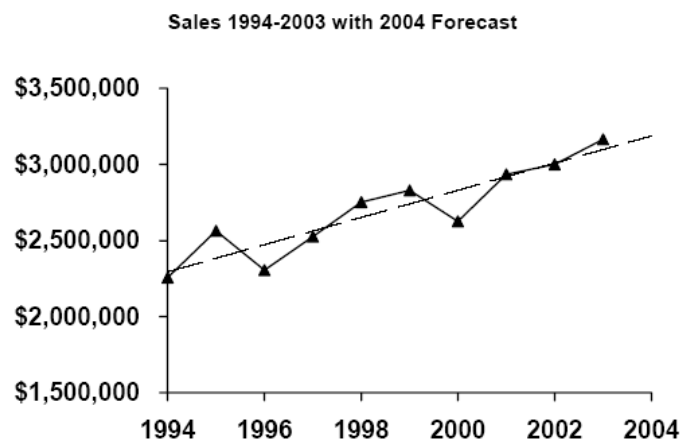
## Components of the Time Series

A time series may have one or more of four **patterns** (also called components) that influence its behavior over time:

- **Trend or secular trend** (Resulting from long term- multiyear -factors)
- **Cyclical** (Resulting from long term- multiyear- cyclical movements in the economy)
- **Seasonal** (Resulting from factors within one year or one day)
- **Irregular or Random Variation** (Resulting from short term, unanticipated ,and nonrecurring factors)

## Trend Pattern

- Over a long period of time, the historical data may exhibit a **trend**, which is a gradual shifting to a higher or lower level.
- For example, sales from year to year may fluctuate but overall, they may be going up, as is the case in the graph below.



- The long-term sales trend has been upward from 1994 to 2003, despite the dips in 1996 and 2000. According to this trend, a reasonable sales forecast for 2004 would be \$3,250,000.

## Cyclical Pattern

- A long-term trend line can still be established even if the sequential data fluctuates greatly from year to year due to cyclical factors. Any recurring fluctuation that lasts longer than one year is attributable to the **cyclical component** of the time series.
- The cyclical component is usually due to the cyclical nature of the economy.
  - ✓ For example: periods of modest inflation followed by periods of rapid inflation can lead to many time series that alternate below and above a generally increasing trend line.



## Seasonal Pattern

- In order to identify trend and cyclical components of a time series, we track the annual historical movements of the data over several years. That is, we look only at results for full years, such as total sales for the years 1994 through 2003.
- However, a time series can fluctuate within the year due to seasonality in the business.
  - ✓ For example, a manufacturer of swimming pools expects low sales activity in winter months, with peak sales in summer.
- Seasonal variations are common in many businesses. **In practice**, a variety of methods exist for including seasonal variations in a forecasting model, but most methods use a seasonal index. Alternatively, seasonal variations can be removed from data by using a weighted average of several time periods instead of data from individual periods.

## Irregular Pattern

- A time series can also vary in a random pattern, not repeating itself in any regular pattern.
- This is called the **irregular pattern or random variables**. It is caused by short-term, nonrecurring factors, and its impact on the time series cannot be predicted.
  - ✓ For example, business can be affected by random happenings (e.g., weather, strikes, fires, etc.).

## Using Time Series methods

The objective of time series analysis is to develop a forecast for future results.

Time series **Smoothing** methods are:

- **Moving averages,**
- **Weighted moving averages and**
- **Exponential smoothing.**

### a. Simple Moving Averages

Use the average of the most recent data in the time series.

### b. Weighted Moving Average

Is a variation of the simple moving average method. When utilizing this method, we use different **weights** for each value and compute a weighted moving average, using the most recent data in the time series.

- **EXAMPLE** :ABC Corporation wants to use a four-month weighted moving average method to forecast sales for the month of May. Actual sales for ABC for the months of January, February, March and April are as follows:

January	\$21,000,000
February	23,000,000
March	25,000,000
April	20,000,000

- ABC has assigned a descending weight to each month's values, starting with the most recent month. Each of the month's results is multiplied by the weight, and then these individual monthly values are added together to determine the May forecast. The weights ABC has assigned to the four previous months are 40%, 30%, 20% and 10%. This means that the results in the most recent month (April) will have four times the impact on the May forecast as the oldest month (January). Note that the total of all the weights equals 10/10, or 1.
- The weighted moving average is the total, \$22,200,000, and this is the expected result for the month of May.

			<u>Weight</u>		
April	\$20,000,000	*	4/10	=	\$ 8,000,000
March	25,000,000	*	3/10	=	7,500,000
February	23,000,000	*	2/10	=	4,600,000
January	21,000,000	*	1/10	=	<u>2,100,000</u>
					<b><u>\$22,200,000</u></b>



### c. Exponential Smoothing

- Is a special type of weighted moving average. With exponential smoothing, we forecast a value for the next period by calculating a weighted average of two numbers only:
  - ✓ The most recent period's **actual** value, and
  - ✓ The most recent period's **forecasted** value, using exponential smoothing.
- The calculation is expressed algebraically as follows:

$$F_{t+1} = \alpha Y_t + (1 - \alpha) F_t$$

Where:

- o  $F_{t+1}$  = forecast for the next period
- o  $Y_t$  = actual value for period  $t$
- o  $F_t$  = forecasted value for period  $t$
- o  $\alpha$  = smoothing constant (between 0 and 1)
- **EXAMPLE:** In January, ABC Corporation began using exponential smoothing to forecast sales for each month. Actual and forecasted sales, in millions, for ABC for the months of January, February, March and April are as follows. Forecasted sales for January through April have been calculated using exponential smoothing and an *alpha* of .1.

	Actual (Y)	Forecasted* (F)
January	\$21.0	N/A
February	23.0	\$21.0
March	25.0	21.2
April	20.0	21.6

\*Forecasted by means of exponential smoothing.

- To calculate a sales forecast for the month of May using exponential smoothing, use only the **actual sales for the month of April** and the **forecasted sales (forecasted using exponential smoothing) for the month of April**.
- As you may have noticed, not just any forecast can be used in this calculation. For exponential smoothing to work, the forecasted value used can only be one that was calculated using exponential smoothing.
- The forecasted sales figure for the month of May will be:  
 $F_{t+1} = (.1 * 20) + (.9 * 21.6)$   
 $F_{t+1} = 21.4$

Note: 1) The current period's actual results multiplied by the smoothing factor, and  
 2) The current period's forecast multiplied by the smoothing factor's complement.



## C.Learning Curves

**Learning curves** describe the fact that the more experience people have with something, the more efficient they become in doing that task. Higher costs per unit early in production are part of the start-up costs. It is commonly accepted that new products and production processes experience a period of low productivity followed by increased productivity.

However, the rate of productivity improvement declines over time until it reaches a level where it remains, until another change in production occurs.

### There are two learning-curve models:

#### ➤ Cumulative Average-Time Learning Model

- ✓ Evaluates the **average** time per unit required to produce a given number of units.

#### ➤ Incremental Unit-Time Learning Model

- ✓ Evaluates the time needed to produce the **last unit** in a quantity of units.

CMA questions have historically used the (cumulative-average-time method).

### Cumulative Average-Time Learning Model

- The Cumulative Average-Time Learning Model uses a constant percentage of decline in **average time per unit** each time that the cumulative quantity of units produced doubles.
  - ✓ In other words, if a plant that manufactures automobiles is subject to an 80% learning curve, and if the time required to build the **first** automobile is 10 hours, then the total time required to manufacture **the first 2** autos will be 80% of (10 hours \* 2), or 16 hours, which equates to an **average of 8 hours** for each automobile.
  - ✓ Note that this model measures **total** time required, which includes the time for the first unit, and uses that total time to determine **average time per unit** for the entire amount produced. This is what "cumulative average" means.
- If learning had not taken place, it would have taken 20 hours (2 \* 10 hours) to produce 2 autos. Thus, a learning rate of 1.00 or 100% is equivalent to no learning taking place.
- The maximum learning rate is 50%, or .50, because at a rate of 50%, the total time required for production of 2 automobiles would be equal to the time required to produce the first automobile (100 \* 2 \* .5), and it is impossible to produce 2 units in less time than it took to produce 1. Therefore, the learning rate will always be between 50% and 100%.

### CMA Example

The cost accountant for Ray Lighting Manufacturing Company is planning production costs for a new lamp. Production of the new lamp will be subject to a 60% learning curve, since it involves only minimal adjustments to established processes. The initial lot of 500 lamps is expected to require 1,000 hours of labor.

Costs are as follows:

- ✓ Direct Labor \$20/hr.
- ✓ Direct Materials \$50/DLH
- ✓ Variable OH Applied \$25/DLH
- ✓ Fixed OH Applied \$2,000/lot manufactured

**(1) What is the cumulative average time per unit after 8 lots have been manufactured, if the cumulative average-time model is used?**

- **Answer:** With a 60% learning curve, when the quantity of units produced doubles, the cumulative average time per unit for the doubled number of units is 60% of the cumulative average time per unit for the original number of units.



- In this case, we are working with lots of 500 rather than units. However, the question asks for average time **per unit**, and there are 500 units in each lot.
- The first doubling will occur when the second lot of 500 has been produced. The second doubling will occur when the fourth lot of 500 has been produced. The third doubling will occur when the eighth lot of 500 has been produced.

Therefore, the **total** number of labor hours required for 8 lots of 500 lamps is:

**1000 hours for the first lot (500 units)**  
**1000 hours X 2 (double) X60% =1200 (1000 units,2 lots)**  
**1200 hours X 2 (double) X60% =1440 (2000 units,4 lots)**  
**1440 hours X 2 (double) X 60%=1728 (4000 units ,8 lots)**

- Or,  $1,000 * (2 * .60) * (2 * .60) * (2 * .60) = 1,000 * 1.2 * 1.2 * 1.2 = 1,728$  **total** labor hours required for 8 lots.
- $1,728$  total labor hours required  $\div$  8 lots = average of 216 labor hours **per lot**.
- Average 216 labor hours per lot  $\div$  500 lamps per lot = .432 cumulative average number of labor hours required **per lamp** for 8 lots of 500 lamps each.

#### What is the total cost for the eighth lot?

- **Answer:** To determine an **incremental** cost under the cumulative average-time learning model, set up a chart such as the following:

Cum # of Lots	Cum Avg Time/Lot	Cum Tot Time	Cumulative Cost	Addition to Cum. Cost
1	* 1,000	= 1,000	$(\$95 * 1,000)^{(a)} + (\$2,000 * 1)^{(b)} = \$97,000$	\$97,000
2	* 600	= 1,200	$(\$95 * 1,200) + (\$2,000 * 2) = \$118,000$	21,000
4	* 360	= 1,440	$(\$95 * 1,440) + (\$2,000 * 4) = \$144,800$	26,800
8	* 216	= 1,728	$(\$95 * 1,728) + (\$2,000 * 8) = \$180,160$	35,360

- Addition to Cumulative Cost is the cumulative cost of the total number of lots manufactured. The total number of lots manufactured is in the first column. Here, that is \$118,000 after the second lot. Subtract the previous cumulative cost, which was \$97,000 after the first lot, from it, and you will have the cost of only Lot 2.
- The Addition to Cumulative Cost for Lots 3 and 4 (the third doubling) is \$144,800 minus \$118,000, or \$26,800. Since there are 2 lots (Lots 3 and 4) that have cost a total of \$26,800, the cost of each lot is 1/2 that amount. Thus, Lot 3 costs \$13,400 and Lot 4 costs \$13,400.
- The total cost for the **final 4 lots** (Lots 5, 6, 7 and 8) is \$35,360, which is \$180,160 minus \$144,160. Thus, the total cost for just the eighth lot is 1/4 of that, or \$8,840.
  - (a) \$95 is the total variable cost per DLH: \$20 for direct labor, \$50 for direct materials, and \$25 for variable overhead applied. 1,000 is the number of hours required to manufacture the first lot. After 2 lots have been manufactured (the first doubling), the average time per lot will be 60% of 1,000 hours, or 600 hours, so the cumulative total time will be (600 hours \* 2), or 1,200 hours.
  - (b) \$2,000 is the fixed overhead applied per lot. Multiply the fixed overhead applied per lot by the number of lots (in column 1).

#### Benefits of Learning Curve Analysis

- Decisions such as the following can be aided by learning curve analysis:
  - ✓ Life-Cycle costing – in calculating the cost of a contract, learning curve analysis can ensure that the cost estimates are accurate over the life of the contract, leading to better bidding.
  - ✓ Development of production plans and labor requirements – production and labor budgets should be adjusted to accommodate learning curves.



### Limitations of Learning Curve Analysis

- ➔ There are three limitations and problems associated with learning curve analysis:
  - ✓ Learning curve analysis is **appropriate only for labor-intensive operations involving repetitive tasks** where repeated trials improve performance. If the production process is designed to have fast set-up times using robotics and computer controls, there is little repetitive labor and thus little opportunity for learning to take place.
  - ✓ The **learning rate is assumed to be constant**.
  - ✓ Third, a carefully estimated learning curve might be unreliable because the observed change in productivity in the data used to fit the model was actually associated with factors other than learning. For example, the increase in productivity might have been due to a change in labor mix, a change in product mix, or some combination of other related factors. In such cases, the learning model is unreliable and produces inaccurate estimates of labor time and cost.





## D.Expected Value

Is the Weighted average of the outcomes of a decision with the probability of each outcome serving as the weight. Also called expected monetary value.

- The **expected value** of a discrete random variable is the **weighted average of all the possible values** of the random variable. The weights are the probabilities for each of the values. The expected value is the **mean** value, also known as the **average** value.
- We will construct a comprehensive example illustrating all the tested terms .

## Risk, Uncertainty and Expected Value

- There are many definitions of **risk**. One definition is “a condition in which there is a possibility of an adverse deviation from a desired outcome.” This is risk defined in its negative connotation.
- However, in a very real sense, risk does not carry a negative connotation. Where investments are concerned (both capital investments and security investments), risk is the possibility that an investment’s **actual** return will differ from its **expected** return. This difference may be either a positive difference or a negative difference.
- **Risk** for a security can be measured by the **variability** of its historical returns or the **dispersion** of its historical returns around their average, or mean, return. Thus, risk is measured by **variance** and **standard deviation**.
- **Uncertainty** is risk that cannot be measured. In discussing a capital investment, we may or may not have information about historical returns on similar investments. If there is no information about historical returns for a particular investment, we are in the position of **decision-making under a condition of uncertainty**. When we are in this position, the probability distribution of possible returns must be determined **subjectively**.

## Example:

- PDC has purchased land, which will be the site of a new luxury condominium complex. PDC plans to price the individual condominium units between \$300,000 and \$1,400,000. PDC has preliminary design with three different size of the condominium.
  - ✓ One with 30 cond.
  - ✓ One with 60 cond.
  - ✓ One with 90 cond.
- The financial success of the project depend upon the size of the cond. Complex and the chance event concerning the demand for the cond.
- The statement of the PDC decision problem is to select the size of the new cond. Project that will lead to the largest profit giving the uncertainty concerning the demand for cond..
- So , it is clear that the decision is to select the best size for the cond. complex .

### ➤ PDC has the following three decision alternatives

- ✓ d1 = a small complex with 30 cond.
- ✓ d2 = a medium complex with 60 cond.
- ✓ d3 = a large complex with 90 cond.

- A factor in selecting the best decision alternatives is the uncertainty associated with the chance event concerning the demand for the cond.

- When asked about the possible demand for the cond. , the PDC’s president acknowledge a wide range of possibilities , **but decided that it would be adequate to consider two possible chance event outcomes :**

- ✓ Strong demand and ,
- ✓ Weak demand.



- In decision analysis the possible outcomes for a chance event are referred to as states of nature. The state of nature are defined so that one and only one of the possible states of nature will occur.

- For the PDC problem, the chance event concerning the demand for condos. has two states of nature:

- ✓ S1 = Strong demand for the condos.
- ✓ S2 = Weak demand for the condos.

- Thus, management must first select a decision alternative (Complex Size), then a state of nature follows (demand for the cond.), and finally a consequence will occur. In this case, the consequence is the PDC's profit.

## Payoff Tables

- Given the three decision alternatives and the two state of nature, which complex size should PDC choose?
- To answer this question, PDC will need to know the consequence associated with each decision alternatives and each state of nature.
- In decision analysis, we refer to the consequence resulting from a specific combination of a decision alternatives and a state of nature as Payoff.

Payoff Table for the PDC cond. Project (Payoffs in \$ Million)

Decision Alternatives	State of Nature	
	Strong Demand S1	Weak Demand S2
Small complex d1	8	7
Medium Demand d2	14	5
Large complex d3	20	-9

## Decision Trees and Expected Value

A **decision tree** is a means of determining the best course of action when there are several possible decision choices under a condition of risk.

- In words, the expected value of a decision alternative is the sum of weighted payoffs for the decision alternative. The weight for a payoff is the probability of the associated state of nature and therefore the probability that the payoff will occur. Let us return to the PDC problem to see how the expected value approach can be applied.
- PDC is optimistic about the potential for the luxury high-rise condominium complex.
- suppose that this optimism leads to an initial subjective probability assessment of 0.8 that demand will be strong (s1) and a corresponding probability of 0.2 that demand will be weak (s2).
- Thus,  $P(s1) = 0.8$  and  $P(s2) = 0.2$ . Using the payoff values in Table 4.1 and equation (4.4), we compute the expected value for each of the three decision alternatives as follows:  
 $EV(d1) = 0.8(8) + 0.2(7) = 7.8$   
 $EV(d2) = 0.8(14) + 0.2(5) = 12.2$   
 $EV(d3) = 0.8(20) + 0.2(-9) = 14.2$
- Thus, using the expected value approach, we find that the large condominium complex, with an expected value of \$14.2 million, is the recommended decision.
- The calculations required to identify the decision alternative with the best expected value can be conveniently carried out on a decision tree. Figure 4.3 shows the decision tree for the PDC problem with state-of-nature branch probabilities. Working backward through the decision tree, we first compute the expected value at each chance node. That is, at each chance node, we weight each possible payoff by its probability of occurrence. By doing so, we obtain the expected values for nodes 2, 3, and 4, as shown in Figure 4.4.

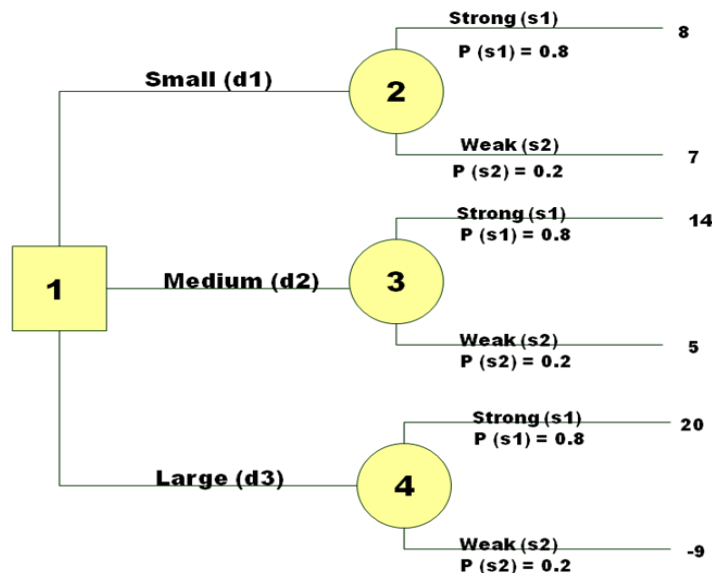


- Because the decision maker controls the branch leaving decision node 1 and because we are trying to maximize the expected profit, the best decision alternative at node 1 is  $d_3$ .

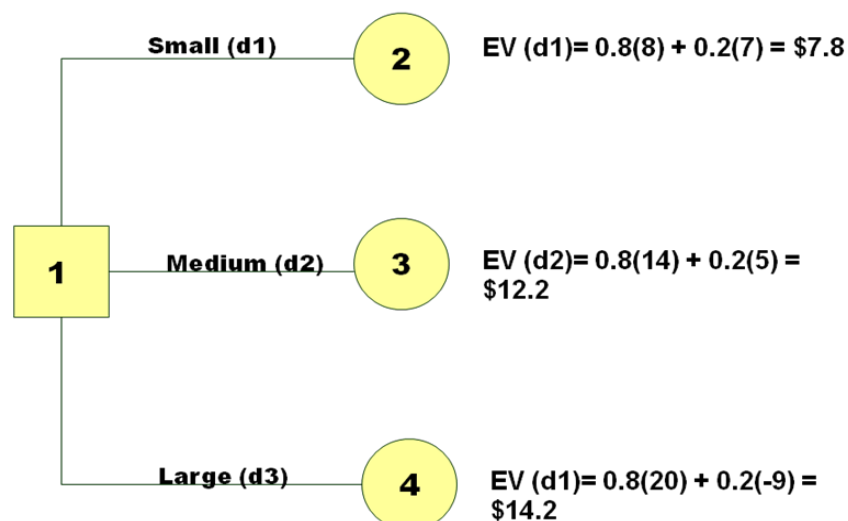
- Thus, the decision tree analysis leads to a recommendation of  $d_3$  with an expected value of \$14.2 million. Note that this recommendation is also obtained with the expected value approach in conjunction with the payoff table.

- Other decision problems may be substantially more complex than the PDC problem, but if a reasonable number of decision alternatives and states of nature are present, you can use the decision tree approach outlined here. First, draw a decision tree consisting of decision nodes, chance nodes, and branches that describe the sequential nature of the problem.
- If you use the expected value approach, the next step is to determine the probabilities for each of the states of nature and compute the expected value at each chance node. Then select the decision branch leading to the chance node with the best expected value. The decision alternative associated with this branch is the recommended decision.

➤ Figure 4.3 PDC DECISION TREE WITH STATE-OF-NATURE BRANCH PROBABILITIES



➤ Figure 4.4 APPLYING THE EXPECTED VALUE APPROACH USING DECISION TREES



**Expected Value of Perfect Information**

Suppose that PDC has the opportunity to conduct a market research study that would help evaluate buyer interest in the condominium project and provide information that management could use to improve the probability assessments for the states of nature. To determine the potential value of this information, we begin by supposing that the study could provide **perfect information** regarding the states of nature; that is, we assume for the moment that PDC could determine with certainty, prior to making a decision, which state of nature is going to occur.

To make use of this perfect information, we will develop a decision strategy that PDC should follow once it knows which state of nature will occur. A decision strategy is simply a decision rule that specifies the decision alternative to be selected after new information becomes available.

To help determine the decision strategy for PDC, we have reproduced PDC's payoff table as Table 4.6.

Note that, if PDC knew for sure that state of nature S1) would occur, the best decision alternative would be  $d_3$ , with a payoff of \$20 million.

Similarly, if PDC knew for sure that state of nature S2 would occur, the best decision alternative would be  $d_1$ , with a payoff of \$7 million.

- Thus, we can state PDC's optimal decision strategy when the perfect information becomes available as follows:

If  $s_1$ , select  $d_3$  and receive a payoff of \$20 million.

If  $s_2$ , select  $d_1$  and receive a payoff of \$7 million.

- What is the expected value for this decision strategy? To compute the expected value with we return to the original probabilities for the states of nature :

➤  $P(s_1)=0.8$ , and  $P(s_2) = 0.2$ .

- Thus, there is a 0.8 probability that the perfect information will indicate state of nature  $s_1$  and the resulting decision alternative  $d_3$  will provide a \$20 million profit. Similarly, with a 0.2 probability for state of nature  $s_2$ , the optimal decision alternative  $d_1$  will provide a \$7 million profit. Thus, from equation (4.4), the expected value of the decision strategy that uses perfect information is

$$0.8(20) + 0.2(7) = 17.4$$

- We refer to the expected value of \$17.4 million as the *expected value with perfect information (EVwPI)*.

- Earlier in this section we showed that the recommended decision using the expected value approach is decision alternative  $d_3$ , with an expected value of \$14.2 million. Because this decision recommendation and expected value computation were made without the benefit of perfect information, \$14.2 million is referred to as the *expected value without perfect information (EVwoPI)*.

**The expected value of the perfect information (EVPI)**

- The expected value with perfect information is \$17.4 million, and the expected value without perfect information is \$14.2; therefore, the expected value of the perfect information (EVPI) is  $\$17.4 - \$14.2 = \$3.2$  million.

- In other words, \$3.2 million represents the, additional expected value that can be obtained if perfect information were available about the states of nature.



- Generally speaking, a market research study will not provide "perfect" information; however, if the market research study is a good one, the information gathered might be worth a sizable portion of the \$3.2 million. Given the EVPI of \$3.2 million, PDC should seriously consider the market survey as a way to obtain more information about the states of nature.

#### F.4.6 : PAYOFF TABLE FOR THE PDC CONDOMINIUM PROJECT (\$ MILLION)

Decision Alternative	State of Nature	
	Strong Demand $s_1$	Weak Demand $s_2$
Small complex, $d_1$	8	7
Medium complex, $d_2$	14	5
Large complex, $d_3$	20	-9

In general, the expected value of perfect information is computed as follows:

$$EVPI = IEVwPI - EVwoPI$$

where

EVPI = expected value of perfect information

EVwPI = expected value *with* perfect information about the states of nature

EVwoPI = expected value *without* perfect information about the states of nature

Sensitivity analysis is especially useful and significant when probabilities of states of nature and decision payoffs are derived subjectively rather than by using objectively quantifiable information

## Sensitivity (Postoptimality) Analysis

### Definition

Sensitivity analysis. A what-if technique that managers use to calculate how an outcome will change if the original predicted data are not achieved or if an underlying assumption changes.

It is particularly helpful when there is a great deal of uncertainty about the various Inputs to a decision model.

## Typical Application of Sensitivity (Postoptimality) Analysis

### Budgeting

Sensitivity analysis adds an extra dimension to budgeting. It enables managers to examine how budgeted amounts change with changes in the underlying assumptions. This assists managers in monitoring those assumptions that are most critical to a company in attaining its budget and allows them to make timely adjustments to plans when appropriate.

### Linear programming

In linear programming problems, sensitivity is the range within which a constraint value, such as a cost coefficient or any other variable, may be changed without changing the optimal solution.

Shadow price is the synonym for sensitivity in that context.

Sensitivity analysis is the study of how changes in the coefficients of a linear programming problem affect the optimal solutions.

### Discounted cash flow methods

In the application of discounted cash flow methods (e.g., net present value), a sensitivity analysis might be performed to ascertain the effects of variability of the discount rate or periodic cash flows.

### Financial planning models



Financial planning models, including those for cash flows and capital budgeting, are other significant applications of sensitivity analysis. For example, changes in selling prices or resource costs may affect available cash and require more or less short-term borrowing.

### **CVP analysis**

The calculation of the margin of safety in a CVP analysis.

Other uses for sensitivity analysis are "What-if" analysis to determine the effect on a project if one variable changes.

## **THE IMPORTANCE OF SENSITIVITY ANALYSIS**

One of the primary advantages of conducting sensitivity analysis is the ability to isolate risks associated with particular components of operations and to develop contingency plans for dealing with these risks

- ➔ Sensitivity analysis is important to decision makers because real world problems exist in a changing environment. Prices of raw material change, product demand change , and so on. If a leaner programming model has been used in such an environment, we can expect some of the coefficients in the model to change over time.
  - ✓ e.g., economic conditions, is a type of the decision variables outside the control of the decision maker, so it called "Exogenous variables".
- ➔ As a result, we will want to determine how changes affect the optimal solution. Sensitivity analysis provides information needed to respond to such changes without requiring a complete solution of a revised linear programming.





# Self Assessment Quiz



### CMA Exam Retired Questions

- (1)2. The table below shows the estimated probabilities of the percent of defective units resulting from a production run.

Percent Defective	Probability
2%	30%
3%	50%
4%	20%

The expected percent defective for a production run would be

- a. 1.50%.
- b. 2.30%.
- c. 2.90%.
- d. 3.00%.

- (2)3. Reeves Inc. has developed a new production process to manufacture its product. The new process is complex and requires a high degree of technical skill. However, management believes there is a good opportunity for the employees to improve as they become more familiar with the production process. The production of the first unit requires 100 direct labor hours. If a 70% learning curve is used, the cumulative direct labor hours required to produce a total of eight units would be

- a. 196 hours.
- b. 274 hours.
- c. 392 hours.
- d. 560 hours.

- (3)4. A forecasting technique that is a combination of the last forecast and the last observed value is called

- a. Delphi.
- b. least squares.
- c. regression.
- d. exponential smoothing.

- (4)5. A large manufacturer's forecast of total sales revenues for a year is **least** likely to be influenced by

- a. the seasonal pattern of sales revenues throughout the year.
- b. anticipated interest rates and unemployment rates.
- c. expected shortages of key raw materials.
- d. input from sales personnel.

- (5)16. CSO: 1A2a LOS: 1A2c

In order to analyze sales as a function of advertising expenses, the sales manager of Smith Company developed a simple regression model. The model included the following equation, which was based on 32 monthly observations of sales and advertising expenses with a related coefficient of determination of .90.

$$S = \$10,000 + \$2.50A$$

S = sales

A = advertising expenses

If Smith Company's advertising expenses in one month amounted to \$1,000, the related point estimate of sales would be

- a. \$2,500.
- b. \$11,250.
- c. \$12,250.
- d. \$12,500.



(6)17. CSO: 1A2a LOS: 1A2a

The results of regressing Y against X are as follows.

Coefficient

Intercept (Fixed cost) 5.23

Slope(Variable cost) 1.54

When the value of X (Volume) is 10, the estimated value of Y(Total cost)is

- a. 6.78.
- b. 8.05.
- c. 20.63.
- d. 53.84.

(7)18. CSO: 1A2b LOS: 1A2d

Which one of the following techniques would **most** likely be used to analyze reductions in the time required to perform a task as experience with that task increases?

- a. Regression analysis.
- b. Learning curve analysis.
- c. Sensitivity analysis.
- d. Normal probability analysis.

(8)19. CSO: 1A2b LOS: 1A2e

Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used and eight units are produced, the cumulative average direct labor hours required per unit of the product will be

- a. 5,120 hours.
- b. 6,400 hours.
- c. 8,000 hours.
- d. 10,000 hours.

(9)20. CSO: 1A2b LOS: 1A2d

A manufacturing firm plans to bid on a special order of 80 units that will be manufactured in lots of 10 units each. The production manager estimates that the direct labor hours per unit will decline by a constant percentage each time the cumulative quantity of units produced doubles. The quantitative technique used to capture this phenomenon and estimate the direct labor hours required for the special order is

- a. cost-profit-volume analysis.
- b. the Markov process.
- c. linear programming analysis.
- d. learning curve analysis.

(10)21. CSO: 1A2b LOS: 1A2e

A manufacturing company has the opportunity to submit a bid for 20 units of a product on which it has already produced two 10-unit lots. The production manager believes that the learning experience observed on the first two lots will continue for at least the next two lots. The direct labor required on the first two lots was as follows.

- 5,000 direct labor hours for the first lot of 10 units
- 3,000 additional direct labor hours for the second lot of 10 units

The learning rate experienced by the company on the first two lots of this product is

- a. 40.0%.
- b. 60.0%.
- c. 62.5%.
- d. 80.0%.



## Answers CMA Exam Retired Questions

- 2. C
- 3. B
- 4. D
- 5. A
- 16. D
- 17. C
- 18. B
- 19. A
- 20. D
- 21. D



# Essay Scenario

(Exam will contain two 30-minute essay questions)



## SELF-STUDY PROBLEMS

### 1. MASTER BUDGET

1. Hansell Company's management wants to prepare budgets for one of its products, duraflex, for July 2002. The firm sells the product for \$40 per unit and has the following expected sales units for these months in 2002:

	April	May	June	July	Aug.	Sep.
	5,000	5,400	5,500	6,000	7,000	8,000

- The production process requires 4 pounds of dura-I000 and 2 pounds of flexplas.
- The firm's policy is to maintain a minimum of 100 units of duraflex on hand at all times with no fewer than 10 percent of units on hand at the end of a period to meet the expected sales for the following month.
- All materials inventories are to be maintained at 5 percent of the production needs for the next month, but not to exceed 1000 pounds.
- The firm expects all inventories at the end of June to be within the guidelines. The purchase department expects the materials to cost \$1.25 per pound and \$5.00 per pound of dura-I000 and flexplas, respectively.
- The production process requires direct labor at two skill levels.
  - The rate for labor at the K102 level is \$50 per hour and for the K175 level is \$20 per hour. The K102 level can process one batch of duraflex per hour; each batch consists of 100 units.
  - The manufacturing of duraflex also requires one-tenth of an hour of K175 workers' time for each unit manufactured.
- Manufactured overhead is allocated at the rate of \$200 per batch and \$30 per direct labor-hour.

**Required** On the basis of the preceding data and projections, prepare the following budgets for **July** 2002:

- a. Sales budget (in dollars).
- b. Production budget (in units).
- c. Production budget for **August** (in units).
- d. Direct materials purchase budget (in pounds).
- e. Direct materials purchase budget (in dollars).
- f. Direct manufacturing labor budget (in dollars).

.....  
g. define the role of sales budget in the development of the annual profit plan and identity the factors that should be considered when preparing a sales forecast and evaluate the feasibility of the sales forecast based on business and economic information provided.

h. explain the relationship between the sales budget and the production budget and identity the role that inventory levels play in the preparation of a production budget and define other factors that should be considered when preparing a production budget.

i. identify the relationship between the direct materials budget, the direct labor budget, and the production budget

j. explain how inventory levels and procurement policies affect the direct materials budget

k. identify and describe alternative ways of allocating employee benefit expense.

l. Identify the components of the selling and administrative budget and explain how specific components of the selling and administrative budget may affect the contribution margin.





m. define the purposes of the cash budget and describe the relationship between the cash budget and all other budgets and identify the relationship between credit policies and purchasing (payables) policies and the cash budget.

n. define the purpose of a pro forma income statement, a pro forma statement of financial position, and a pro forma cash flow statement and identify the relationship among these statements and all other budgets ( evaluate whether a company has achieved strategic objectives based on pro forma income statements).

o. Outline the budgeting process.



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School of Continuing Education

1. Master Budget

Sales Budget (in dollars).

HANSEII COMPANY  
Sales Budget  
For July 2002

Budgeted sales in units	6,000
Budgeted selling price per unit	\$ 40
Budgeted sales	\$ 240,000

b.

HANSEII COMPANY  
Production Budget (in units)  
For July 2002

Desired ending inventory (July 31)		
(The higher of 100 and $7,000 \times 0.1$ )		700
Budgeted sales for July 2002	+	6,000
Total units needed for July 2002		6700
Beginning inventory (July 1)	-	
(The higher of 100 and $6,000 \times 0.1$ )		600
Units to manufacture in July		6100

c.

HANSEII COMPANY  
Production Budget (in units)  
For August 2002

Desired ending inventory ( $8,000 \times 0.1$ )		800
Budgeted sales	+	7,000
Total units needed		7800
Beginning inventory	-	700
Units to manufacture in August		7100

d.

HANSEII COMPANY  
Direct Materials Purchases Budget (in  
pounds)  
For July 2002



**THE AMERICAN UNIVERSITY IN CAIRO**  
**School of Continuing Education**

	Dura-1000 (4lb. each)	Direct Materials Flexplas (2lb. each)
Materials required for budgeted production (6,100 units of duraflex)	24400	12200
Add: Target inventories (lower of 1,000 or 5 percent of August production needs)	1000	710
Total materials requirements	25400	12910
Less: Expected beginning inventories (lower of 1,000 or 5 percent)	1000	610
Direct materials to be purchased	24400	12300

HANSEIL COMPANY Direct Materials Purchases Budget (in dollars)			
e.	For July 2002		
	Budgeted Purchases (Pounds)	Expected Purchase Price per Unit	Total
Dura-1000	24400	1.25	30,500
Flexplas	12300	5	61,500
<b>Budgeted purchases</b>			<b>92,000</b>

HANSEIL COMPANY Direct Manufacturing labor Budget For July 2002					
	Direct Labor-Hours per Batch	Number of Batches	Total Hours	Rate per Hour	
K102 Hours	1	61		61	50 \$ 3,050
K175Hours	10	61		610	20 \$ 12,200
Total				671	\$ 15,250



**g. define the role of sales budget in the development of the annual profit plan.**

Normally, the preparation of a sales budget is the first step in the comprehensive budget process. Once sales have been determined, related budgets can be prepared, e.g., the production budget, expense budgets, and pro forma financial statements.

A **sales budget** shows expected sales in units at their expected selling prices. Preparation of the sales budget for a period usually starts with the firm's forecasted sales level, production capacity, and long-term and short-term objectives.

A sales budget is the *cornerstone* of budget preparation because a firm can complete the plan for other activities only after it identifies the expected sales level. A manufacturing firm cannot complete its production schedule without knowing the number of units it must produce, and the number of units to be produced can be ascertained only after the firm knows the number of units budgeted to be sold for the period.

A sales forecast estimates future sales of the firm's products and is the starting point in preparing sales budgets for the period. An accurate sales forecast enhances the usefulness of the budget as a planning and control tool.

Sales forecasting by its nature is subjective. To reduce subjectivity in forecasts, many firms generate several independent sales forecasts as a standard procedure. A firm can, for example, have its market research unit, the manager of its business unit, and the sales department of its budget unit prepare a sales forecast. As a result, the volume of sales in the sales budget would be the one that all parties agree is the most likely prediction.

**The following are among the factors that should be considered in sales forecasting:**

- Current sales levels and sales trends of the past few years.
- General economic and industry conditions.
- Competitors' actions and operating plans.
- Pricing policies.
- Credit policies.
- Advertising and promotional activities.

For example,

- a) The company may determine that demand is highly elastic for its mature products and that growth will come only from new product introductions and from cost savings on existing products.
- b) At the same time, the company determines that a tight monetary policy on the Fed's part must cause the firm to tighten its credit standards.
- c) Simultaneously, a competitor that the firm knows is a low-cost producer is also considering moving into the markets that the budgeting company is considering.

All of these factors must be taken into account when forming expectations about product sales for the coming budget cycle.

**h. explain the relationship between the sales budget and the production budget and identify the role that inventory levels play in the preparation of a production budget and define other factors that should be considered when preparing a production budget.**

The production budget follows the sales budget. Once a firm knows its expected sales, production can be estimated. The production budget is based on assumptions appearing in the sales budget. A **production budget** is a plan for acquiring and combining the resources needed to carry out the manufacturing operations that allow the firm to satisfy its sales goals and have the desired amount of inventory at the end of the budget period. The total number of units to be produced depends on the budgeted sales, the desired amount of finished goods ending inventory, and the units of finished goods beginning inventory as described in the following:



$$\begin{array}{rclcl}
 \text{Budgeted} & & \text{Budgeted} & & \text{Desired ending} & & \text{Beginning} \\
 \text{production} & = & \text{sales} & + & \text{inventory} & - & \text{inventory} \\
 \text{(in units)} & & \text{(in units)} & & \text{(in units)} & & \text{(in units)}
 \end{array}$$

Selecting the desired ending inventory for a period requires balancing opposing goals. On one hand, a firm does not want to lose sales because of insufficient inventory. On the other hand, having an excessive amount of inventory on hand is costly.

Thus, the organization must determine how quickly it can increase production if demand warrants and then set its desired production and inventory levels accordingly.

For a firm using a just-in-time system, for example, the desired ending as well as the beginning inventory will be a small amount or zero. Other factors that affect a production budget include company policies regarding stabilizing production versus flexible production schedules that minimize finished inventories, conditions of production equipment, availability of production resources such as materials and laborers, and experience with production yield and quality.

The production manager reviews the production budget to ascertain that the firm can attain the budgeted level of production with the facilities available, keeping in mind the other activities scheduled for the same period. If the production level exceeds the maximum capacity available, management can either revise the budgeted sales level or find alternatives to satisfy the demand. If the available capacity exceeds the budgeted production level, management might want to find alternative uses for the idle capacity or schedule other activities such as preventive maintenance and trial runs of new production processes. This ability to coordinate sales -needs and production activities is another benefit of having a budget that allows firms to identify mismatches between capacity and output.

#### **i. identify the relationship between the direct materials budget, the direct labor budget, and the production budget**

All of these budgets are interrelated because a change in one budget may require a change in another budget. As production changes, the amount of labor and material will change. As the amount of labor changes, there may need to be a change in indirect materials and indirect labor. Indirect materials are materials used in the manufacturing process but their costs are not directly traceable to any particular product. Indirect labor would be the same thing. An example of indirect labor would be the wages of a janitor who cleans up the plant, since his wages cannot be traced to any one product. As these items change, there may also be a change required in the overhead budget, caused by, for example, changes in the amount of electricity the company expects to use or changes in the required amount of equipment maintenance. Because of the way that individual budgets are connected to each other, a change in one budget will almost always affect at least one other budget.

#### **j. explain how inventory levels and procurement policies affect the direct materials budget**

To minimize raw materials carrying costs and obsolescence, the purchasing of inputs is tied closely to the projections contained in the production budget.

#### **k. identify and describe alternative ways of allocating employee benefit expense.**

Consider the classification of manufacturing labor payroll fringe costs (for example, employer payments for employee benefits such as Social Security, life insurance, health insurance, and pensions). Some companies classify these costs as manufacturing overhead costs. In other companies, the fringe benefits related to direct manufacturing labor are treated as an additional direct manufacturing labor cost. The latter approach is preferable because the stated wage and the fringe costs together are a fundamental part of acquiring direct manufacturing labor services.

**I. Identify the components of the selling and administrative budget and explain how specific components of the selling and administrative budget may affect the contribution margin.**

The selling and general administrative expense budget contains all nonmanufacturing expenses expected in the budget period. Portions of selling and administrative expenses are variable while others are fixed. Selling and administrative expense budgets are prepared by various departments in a manner consistent with either planned sales volume or the fixed character of the expenses. The selling and administrative budget needs to be detailed in order that the key assumptions associated with it can be better understood.

This budget is important as a guideline for operations. However, using this budget to evaluate performance must be done carefully, because many items in it are discretionary expenditures and have mostly long-term impacts.

For example, a manager could cut expenditures for customer service from \$200,000 to \$50,000 to improve earnings and to show that he or she has good control of expenses. The manager's incentive is a reward in the form of a bonus or promotion resulting from the likely short-term result of this expenditure reduction. The customer service reduction probably will not have any immediate effect on sales but will most likely have negative consequences for the firm in the future. Hence, firms must be wary of taking a short-term perspective when preparing a selling and administrative expense budget.

Another alternative to present S,G&A budget preparation of the individual costs in the value chain activities except the production activity, in this format the firm will prepare both upstream (R&D) and downstream (marketing, distribution, customer service )cost budgets .

The variable and fixed portions of selling and administrative costs must be treated separately.

- 1) Some S&A costs vary directly and proportionately with the level of sales. As more product is sold, sales representatives must travel more miles and serve more customers.
- 2) Other S&A expenses, such as sales support staff, are fixed; they must be paid no matter the level of sales.
- 3) As the variable portion of S&A costs increases, contribution margin, i.e., the amount available for covering fixed costs, is decreased: .

Note that management can make tradeoffs among elements of selling and administrative expenses that can affect contribution margin.

- 1) For example, use of fixed advertising expense will increase contribution margin, while the same sales level might be reached using variable sales commissions, a method that would reduce contribution margin.

**m. define the purposes of the cash budget and describe the relationship between the cash budget and all other budgets and identify the relationship between credit policies and purchasing (payables) policies and the cash budget.**

The last schedule prepared before the financial statements is the cash budget. The cash budget is the most important part of a company's budget program. The cash budget is a schedule of estimated cash collections and payments. The various operating budgets and the capital budget are inputs to the cash budgeting process. A cash budget may be prepared monthly or even weekly to facilitate cash planning and control. A cash budget is an example of a feedforward control because it anticipates cash needs and allows for the provision of resources to meet those needs.

**Cash budget and financing**

Having an adequate amount of cash on hand at all times is crucial for a business's survival and capturing opportunities. A **cash budget** brings together the anticipated effects of all budgeted activities on cash. It also delineates the expected cash receipts and disbursements during the budget period. By preparing a cash budget, management can ensure having sufficient cash on hand to carry out its planned activities, arrange financing in advance to avoid the high costs of emergency borrowing, and plan investments to earn the highest possible return from any excess cash on hand. For smaller firms and those with seasonal business, the cash budget is especially critical to ensuring



smooth operations and avoiding crises. The critical importance of having adequate cash to meet all operation needs leads many firms to consider cash budgets among the most important element of their master budget. A cash budget is particularly valuable in seasonal businesses in which a few months of revenues must be matched with 12 months of costs. Because a temporary shortage of cash may drive an otherwise financially sound organization into bankruptcy, proper planning can prevent financial embarrassment.

A cash budget includes all items that affect cash flows and pulls data from almost all parts of the master budget. In preparing a cash budget, a firm reviews all budgets to identify all revenues, expenses, and other transactions that affect cash. But the cash budget should include all cash inflows and outflows during the period without regard to the accrual accounting treatment of the transactions.

### **Major sections in the cash budget**

A cash budget generally includes three major sections:

1. Cash available
2. Cash disbursements
3. Financing

#### **1. Cash available**

The cash available section details the sources of cash for operations to use. In general, an organization's two sources of cash are the cash balance at the beginning of the budget period and cash collections during that period. Cash collections include cash collected from sales and accounts and notes receivable. Factors that could affect cash sales and cash collection of accounts include the firm's sales levels, credit policy, and collection experience.

A firm can engage in nonroutine transactions that generate cash. Examples are selling operating assets such as equipment or a building, or nonoperating assets such as land purchased for the site of a factory that the firm no longer intends to build. All proceeds from such sales should be included in the cash available section.

#### **2. Cash disbursements**

The cash disbursements section lists all payments, including those for purchases of direct materials and supplies, wages and salaries, operating expenses, interest expenses, and taxes. The difference between cash available and cash disbursements is the *ending cash balance* before financing.

Credit and purchasing policies have a direct impact on the cash budget.

- a) Loose credit policies toward customers' credit result in delayed cash receipts.
- b) Taking advantage of purchase discounts results in accelerated cash outlays.

#### **3. Financing**

A firm must arrange for additional funds if its cash balance is expected to fall below the desired minimum balance set by management. On the other hand, when the firm expects to have a significant amount of excess cash, it must determine how to invest the excess. Return, liquidity, and risk must be weighed for alternative investments. Both the additional funding and planned investments are included in the financing section.

The completed cash budget can be used to plan outside financing activities. For example, if the budget shows a cash deficit at some future date, the firm can plan ahead to borrow the necessary funds or sell stock. .

Dividend policy can also be planned using the cash budget. For instance, dividend payment dates should correspond to a time when the firm has excess cash.





**n. define the purpose of a pro forma income statement, a pro forma statement of financial position, and a pro forma cash flow statement and identify the relationship among these statements and all other budgets ( evaluate whether a company has achieved strategic objectives based on pro forma income statements).**

These financial statements are key elements in helping a company plan for the future. Based on these pro forma statements, a company can: determine if it is meeting its pre-determined targets, estimate the amount of external funding needed to support its projected sales growth; and perform sensitivity analysis to identify the impacts of estimates, operating, and policy changes on selected financial ratios.

This topic traces the process of creating pro forma financial statements using the percentage of sales method, which builds a pro forma income statement and then a pro forma balance sheet, and it shows an example of creating a pro forma statement of cash flows. It describes the process of assessing anticipated performance using pro forma financial statements, including performing sensitivity analyses.

Pro forma statements represent a company's projected financial statements and they are useful in the company's planning process because these statements support four major functions. They help a company to:

1. Assess whether its anticipated performance is in line with its established targets.
2. Anticipate the amount of funding needed to achieve its forecasted sales growth.
3. Estimate the effects of changes in assumptions of key numbers by performing sensitivity analysis (i.e., what-if analysis). Sensitivity analysis helps to identify potential conditions that could lead to major problems for the company. This enables the company to plan for appropriate actions in case such an event should occur. In addition, sensitivity analysis also provides the company with the opportunity to analyze the impact of changing its operating plans.
4. Pro forma financial statements are used to determine whether the company will be able to remain in compliance with the required covenants on its long-term debt. Long-term debt usually involves requirements for the company to maintain certain ratios in its financial statements, and these requirements are called covenants. Covenants are part of most loan agreements. One example of a covenant is a requirement that the company maintain a certain current ratio, such as at least 2 : 1. If the company's current ratio falls below the required level, the company is technically in default on its debt, even though it may be making every scheduled payment. If that happens, the lender can legally demand payment of the entire loan balance immediately, which could force the company into bankruptcy. Therefore, it is very important that the company maintain compliance with its debt covenants. Some of the usual covenants include maintenance of a minimum current ratio, maintenance of a minimum debt ratio, and maintenance of a minimum interest coverage ratio. So calculation and analysis of these ratios need to be a part of the analysis of the pro forma statements.

**The debt to total assets ratio** (also called the debt ratio) The total debt ratio measures the percentage of funds provided by creditors. It determines long-term debt-payment ability and the degree to which creditors are protected from the firm's insolvency. Hence, creditors prefer this ratio to be low as a cushion against losses.

**The pro forma income statement** is used to decide whether the budgeted activities will result in an acceptable level of income. If the initial pro forma income shows a loss or an unacceptable level of income, adjustments can be made to the component parts of the master budget.

Other strategic objectives can also be observed from the pro forma income statement, such as desired rates of return, debt ratio, and the interest coverage ratio (times interest earned). The adequacy of earnings per share can also be observed from the pro forma income statement.



Once the company's dividend policy has been factored in to determine the amount of dividends to be paid, the amount of projected retained earnings will then be added to its current balance sheet to create the pro forma balance sheet, information from the company's capital expenditure budget and cash budget will also be used to help formulate the pro forma balance sheet, Once the pro forma income statement and balance sheet are compiled, the information can then be used to create the pro forma statement of cash flows.

### **Earnings Per Share.**

Complete the Income statement. Interest expense is subtracted from EBIT to calculate EBT. We then subtract tax at a given tax rate to calculate net Income before preferred dividends; and then we subtract preferred dividends to calculate net Income available to common shareholders. Net Income available to common shareholders divided by the number of shares of common stock will give us **Earnings Per Share**. (For forecasting purposes, we do not distinguish between Basic Earnings Per Share and Diluted Earnings Per Share.) Common dividends per share multiplied by the number of common shares equals the total dividends paid on common stock. The forecasted addition to retained earnings is net Income available to common stockholders minus total common dividends. (Note that this is the same as net Income minus preferred dividends minus common dividends.)

**The pro forma balance sheet** is prepared using the cash and capital budgets and the pro forma income statement.

- 1) The pro forma balance sheet is the beginning-of-the-period balance sheet updated for projected changes in cash, receivables, payables, inventory, etc.
- 2) If the balance sheet indicates that a contractual agreement may be violated, the budgeting process must be repeated.
  - a) For example, some loan agreements require that owners' equity be maintained at some percentage of total debt or that current assets be maintained at a given multiple of current liabilities.

**The pro forma statement of cash flows** classifies cash receipts and disbursements depending on whether they are from operating, investing, or financing activities.

- 1) The direct presentation reports the major classes of gross cash operating receipts and 'payments and the difference between them.
- 2) The indirect presentation reconciles net income with net operating cash flow.

Under GAAP, this reconciliation must be disclosed whichever presentation is chosen.

- a) The reconciliation requires balance sheet data, such as the changes in accounts receivable, accounts payable, and inventory, as well as net income.
- d. All the pro forma statements are interrelated (articulated), e.g., the pro forma cash flow statement will include anticipated borrowing. The interest on this borrowing will appear in the pro forma income statement.

### **o. Outline the budgeting process.**

The traditional budgeting process can range from the informal simple processes small firms use that take only days or weeks to complete to elaborate, lengthy procedures large firms or governments employ that span months from start to final approval. The process usually includes the formation of a budget committee; determination of the budget period; specification of budget guidelines; preparation of the initial budget proposal; budget negotiation, review, and approval; and budget revision.

### **Budget Committee**

The budget committee oversees all budget matters and often is the highest authority in an organization for all matters related to the budget. The committee sets and approves the overall budget goals for all major business units, coordinates budget preparation, resolves conflicts and differences that may arise during budget preparation, approves the final budget, monitors operations as the year unfolds, and reviews the operating results at the end of the period. The budget committee also approves major revisions of the budget during the period. A typical budget committee includes the chief executive officer (CEO) or one or more vice presidents, heads of strategic business units, and the chief financial officer (CFO).



## Budget Period

A budget usually is prepared for a set time, most commonly for the fiscal year with subperiod budgets for each of the constituent quarters or months. Synchronizing the budget period with the organization's fiscal period for external financial reporting eases budget preparation and facilitates comparisons and reconciliation of actual results with the budgeted amounts.

In practice, firms seldom have budgets for only one year. The budgets for the years beyond the coming year, however, usually contain only essential operating data. For example, Johnson & Johnson has only skeleton budgets for its 5- and 10-year budgets. Having a long-term budget in parallel with the master budget allows alignment of strategic goals and short-term operations.

## Budget Guidelines

In a traditional budgeting process the budget committee is responsible for providing initial budget guidelines that set the tone for the budget and govern its preparation. The committee issues budget guidelines after careful considerations on the general outlook of the economy and the market; the organization's strategic goals, long-term plan, strategic projects, and expected operating result of the current period; specific corporate decisions or policies such as mandates for downsizing, reengineering, pollution control, and special promotions; and short-term objectives. All responsibility centers (or budget units) follow the budget guidelines in preparing their budgets.

## Initial Budget Proposal

Each responsibility center prepares its initial budget proposal based on the budget guidelines. In addition, budget units need to consider a number of internal factors in preparing their budget proposals, including:

- Changes in availability of equipment or facilities.
- Adoption of new or improved operating processes and planned efficiency gains.
- Changes in product and/or service design and mix of offerings.
- Introduction of new products and services.
- Consumption rates of activities and their resources for the recurring volume and mix of products and services.
- Changes in expectations or operating processes of other budget units that the budget unit relies on for its input materials or other operating factors.
- Changes in other operating factors or in the expectations or operating processes in those other budget units that rely on the budget unit to supply them components. Inevitably, external factors have effects on operations and a budget cannot be completed without careful examination of important external factors such as:
  - The industry's outlook for the near term.
  - Competitors' actions.
  - Threat to entry.
  - Substitute products.
  - Bargaining power of customers.
  - Bargaining power (availability and price) of input suppliers (raw materials, components, and labor).

## Negotiation, Review, and Approval

The executives of budget units examine initial budget proposals. The examination includes determining adherence to the budget guidelines, verifying that the budget goals can be reasonably attained and are in line with the goals of the immediately higher organizational unit, and assuring that the budgeted operations are consistent with those of other budget units.

As budget units complete their budgets within the units, the budgets go through successively higher levels of the organization until they reach the top level and the combined unit budgets become the organization's budget. The budget committee reviews the budget for consistency with the budget guidelines, attainment of the desired short-term goals and strategic objectives of the organization. The budget committee gives final approval, and the CEO then approves the entire budget and submits it to the board of directors.

## Revision

No budget is ever cast in stone. As operations unveil, newly learned internal factors or external situations may make it necessary to revise the budget. Procedures for budget revisions vary among organizations. For organizations that allow budget revisions only under special circumstances, obtaining approval to modify a budget can be difficult. Not all events, however, unfold as predicted in a budget. Strictly implementing a budget as prescribed, even when the actual events differ significantly from those expected, certainly is not a desirable behavior. In such cases, managers should be encouraged not to rely on the budget as the absolute guideline in operations.



# Glossary

(based on ICMA suggested reading list)



**Activity-based budgeting (ABB).** Budgeting approach that focuses on the budgeted cost of the activities necessary to produce and sell products and services.

**activity-based budgeting (ABB)** A budgeting process that is based on activities and associated activity costs to support production and sales

**authoritative standard** A standard determined solely or primarily by management

**Benchmarking.** The continuous process of comparing the levels of performance in producing products and services and executing activities against the best levels of performance in competing companies or in companies having similar processes. (244)

**benchmarking** A process by which a firm identifies its critical success factors, studies the best practices of other firms (or other business units within a firm) for achieving these critical success factors, and then implements improvements in the firm's processes to match or beat the performance of those competitors

**Benchmarking** A systematic approach to identifying the activities with the greatest potential for improvement.

**Breakeven point (BEP).** Quantity of output sold at which total revenues equal total costs, that is where the operating income is zero.

**Break-even point** The level of sales at which profit is zero.

**breakeven point** The point at which revenues equal total costs and profit is zero

**Budget.** Quantitative expression of a proposed plan of action by management for a specified period and an aid to coordinating what needs to be done to implement that plan.

**budget** A detailed plan for the acquisition and use of financial and other resources over a specified period of time—typically a fiscal year

**Budget** A detailed plan for the future, usually expressed in formal quantitative terms

**Budget** A quantitative plan for acquiring and using resources over a specified time period.

**Budgetary slack.** The practice of underestimating budgeted revenues, or overestimating budgeted costs, to make budgeted targets more easily achievable.

**budgetary slack** The “cushion” managers intentionally build into budgets to help ensure success in meeting the budget

**budgeted capacity utilization** The planned (forecasted) output for the coming period, usually a year

**Budgeted cost.** Predicted or forecasted cost (future cost) as distinguished from an actual or historical cost.

**Budget committee** A group of key managers who are responsible for overall budgeting policy and for coordinating the preparation of the budget.



**budgeting** The process of projecting continuing operations and projects and then reflecting their financial impact

**Budgeted indirect-cost rate.** Budgeted annual indirect costs in a cost pool divided by the budgeted annual quantity of the cost allocation base.

**Budgeted performance.** Expected performance or a point of reference to compare actual results.

**capital budget** A listing of approved investment projects for a given accounting period

**Capital budgeting** The process of planning significant investments in projects that have long term implications such as the purchase of new equipment or the introduction of a new product.

**Cash budget.** Schedule of expected cash receipts and disbursements.

**cash budget** A schedule depicting the effects on cash of all budgeted activities

**Cash budget** A detailed plan showing how cash resources will be acquired and used over a specific time period.

**Chief Financial Officer (CFO)** The member of the top management team who is responsible for providing timely and relevant data to support planning and control activities and for preparing financial statements for external users.

**Coefficient of determination ( $r^2$ ).** Measures the percentage of variation in a dependent variable explained by one or more independent variables.

**$R^2$**  A measure of goodness of fit in least-squares regression analysis. It is the percentage of the variation in the dependent variable that is explained by variation in the independent variable.

**R-squared** A number between zero and one. Often it is described as a measure of the explanatory power of the regression; that is, the degree to which changes in the dependent variable can be predicted by changes in the independent variable

**Constant.** The component of total cost that, within the relevant range, does not vary with changes in the level of the activity. Also called *intercept*.

**Continuous budget.** See *rolling budget*.

**Continuous budget** A 12-month budget that rolls forward one month as the current month is completed.

**continuous improvement** (The Japanese word is *kaizen*.) A management technique in which managers and workers commit to a program of continuous improvement in quality and other critical success factors

**continuous-improvement standard** A standard that gets progressively tighter over time





**Control.** Taking actions that implement the planning decisions, deciding how to evaluate performance, and providing feedback and learning that will help future decision making.

**control** The set of procedures, tools, and systems that organizations use to reach their goals

**Control** The process of instituting procedures and then obtaining feedback to ensure that all parts of the organization are functioning effectively and moving toward overall company goals.

**Control** Those steps taken by management to increase the likelihood that all parts of the organization are working together to achieve the goals set down at the planning stage.

**Controlling** Actions taken to help ensure that the plan is being followed and is appropriately modified as circumstances change.

**Controllability.** Degree of influence that a specific manager has over costs, revenues, or related items for which he or she is responsible.

**Controllable cost.** Any cost that is primarily subject to the influence of a given responsibility center manager for a given period.

**controllable cost** A cost that a manager or employee has discretion in choosing to incur or can significantly influence the amount of within a given, usually short, period of time

**Controller.** The financial executive primarily responsible for management accounting and financial accounting. Also called *chief accounting officer*.

**Controller** The member of the top management team who is responsible for providing relevant and timely data to managers and for preparing financial statements for external users. The controller reports to the CFO.

**correlation** A given variable tends to change predictably in the same or opposite direction for a given change in the other, correlated variable

**cost leadership** A strategy in which a firm outperforms competitors by producing products or services at the lowest cost

**Cost-volume-profit (CVP) analysis.** Examines the behavior of total revenues, total costs, and operating income as changes occur in the units sold, the selling price, the variable cost per unit, or the fixed costs of a product.

**cost-volume-profit (CVP) analysis** A method for analyzing how various operating decisions and marketing decisions will affect net income

**Cost-volume-profit (CVP) graph** A graphical representation of the relationships between an organization's revenues, costs, and profits on the one hand and its sales volume on the other hand.

**Cumulative average-time learning model.** Learning curve model in which the cumulative average time per unit declines by a constant percentage each time the cumulative quantity of units produced doubles.





**currently attainable standard** A level of performance that workers with proper training and experience can attain most of the time without extraordinary effort

**Degree of operating leverage** A measure, at a given level of sales, of how a percentage change in sales will affect profits. The degree of operating leverage is computed by dividing contribution margin by net operating income.

**Dependent variable.** The cost to be predicted.

**dependent variable** The cost to be estimated

**Dependent variable** A variable that responds to some causal factor; total cost is the dependent variable, as represented by the letter  $Y$ , in the equation  $Y = a + bX$ .

**design analysis** A common form of value engineering in which the design team prepares several possible designs of the product, each having similar features with different levels of performance and different costs

**differentiation** A competitive strategy in which a firm succeeds by developing and maintaining a unique value for the product (or service) as perceived by consumers

**Directing and motivating** Mobilizing people to carry out plans and run routine operations.

**Dysfunctional decision making.** See *suboptimal decision making*.

**Expected monetary value.** See *expected value*.

**Expected value.** Weighted average of the outcomes of a decision with the probability of each outcome serving as the weight. Also called *expected monetary value*.

**expected value of perfect information (EVPI)** The maximum amount that a rational decision maker would be willing to pay for "perfect information"

**Feedback** Accounting and other reports that help managers monitor performance and focus on problems and/or opportunities that might otherwise go unnoticed.

**Financial budget.** Part of the master budget that focuses on how operations and planned capital outlays affect cash. It is made up of the capital expenditures budget, the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows.

**Financial planning models.** Mathematical representations of the relationships among operating activities, financial activities, and other factors that affect the master budget.

**financial budgets** A plan that identifies sources and uses of funds for budgeted operations and capital expenditures for the coming period

**Flexible budget.** Budget developed using budgeted revenues and budgeted costs based on the actual output in the budget period.

**flexible budget** A budget that adjusts revenues and costs to the actual output level achieved



**Flexible budget** A report showing estimates of what revenues and costs should have been, given the actual level of activity for the period.

**goal congruence** The consistency between the goals of the firm and the goals of its employees. It is achieved when the manager acts independently in such a way as to simultaneously achieve top management's objectives

**Goal congruence.** Exists when individuals and groups work toward achieving the organization's goals. Managers working in their own best interest take actions that align with the overall goals of top management.

**High-low method.** Method used to estimate a cost function that uses only the highest and lowest observed values of the cost driver within the relevant range and their respective costs.

**high-low method** A method using algebra to determine a *unique* estimation line between representative high and low points in a given data set

**High-low method** A method of separating a mixed cost into its fixed and variable elements by analyzing the change in cost between the high and low activity levels.

**ideal standard** A standard that reflects perfect implementation and maximum efficiency in every aspect of the operation

**Ideal standards** Standards that assume peak efficiency at all times.

**Incongruent decision making.** See *suboptimal decision making*.

**Independent variable.** Level of activity or cost driver used to predict the dependent variable (costs) in a cost estimation or prediction model.

**independent variable** The cost driver used to estimate the value of the dependent variable

**Independent variable** A variable that acts as a causal factor; activity is the independent variable, as represented by the letter  $X$ , in the equation  $Y = a + bX$ .

**Intercept.** See *constant*.

**internal rate of return (IRR)** An estimate of the true (i.e., economic) rate of return on an investment

**Kaizen budgeting.** Budgetary approach that explicitly incorporates continuous improvement anticipated during the budget period into the budget numbers.

**kaizen budgeting** A budgeting approach that incorporates continuous improvement expectations in the budget

**Learning.** Involves managers examining past performance and systematically exploring alternative ways to make better informed decisions and plans in the future.

**Learning curve.** Function that measures how labor-hours per unit decline as units of production increase because workers are learning and becoming better at their jobs.



**learning curve analysis** A systematic method for estimating costs when learning is present

**learning rate** The percentage by which average time (or total time) falls from previous levels, as output doubles

**least squares regression** One of the most effective methods for estimating costs, found by minimizing the sum of the squares of the estimation errors

**Least-squares regression method** A method of separating a mixed cost into its fixed and variable elements by fitting a regression line that minimizes the sum of the squared errors.

**Life-cycle budgeting.** Budget that estimates the revenues and business function costs of the value chain attributable to each product from initial R&D to final customer service and support.

**Linear programming (LP).** Optimization technique used to maximize an objective function (for example, contribution margin of a mix of products), when there are multiple constraints.

**linear programming** A mathematical technique that can be used to solve for the best product mix

**long-range plan** A plan that identifies actions required during the 5- to 10-year period covered by the plan to attain the firm's strategic goals

**Manufacturing overhead budget** A detailed plan showing the production costs, other than direct materials and direct labor, that will be incurred over a specified time period.

**Master budget.** Expression of management's operating and financial plans for a specified period (usually a fiscal year) including a set of budgeted financial statements. Also called *pro forma statements*.

**Master budget** A number of separate but interdependent budgets that formally lay out the company's sales, production, and financial goals and that culminates in a cash budget, budgeted income statement, and budgeted balance sheet.

**master budget** A comprehensive plan of operations for the upcoming period; it translates short-term objectives into action steps; set of financial and operational budgets

**merchandise purchases budget** A plan that shows the amount of merchandise the firm needs to purchase during the budget period

**Multiple regression.** Regression model that estimates the relationship between the dependent variable and two or more independent variables.

**Multiple regression** An analytical method required when variations in a dependent variable are caused by more than one factor.

**multiple linear regression** Used to describe regression applications having two or more independent variables.

**operating budgets** Plans that identify resources needed to support operating activities and the acquisition of these resources



**Operating budget.** Budgeted income statement and its supporting budget schedules.

**Operating income.** Total revenues from operations minus cost of goods sold and operating costs (excluding interest expense and income taxes).

**Operating leverage** A measure of how sensitive net operating income is to a given percentage change in dollar sales.

**outliers** Unusual data points that strongly influence a regression analysis

**participative standards** Active participation throughout the standard-setting process by employees affected by the standards

**Participative budget** See *Self-imposed budget*.

**Perpetual budget** See *Continuous budget*.

**planning and decision making** Budgeting and profit planning, cash flow management, and other decisions related to operations

**Planning.** Selecting organization goals, predicting results under various alternative ways of achieving those goals, deciding how to attain the desired goals, and communicating the goals and how to attain them to the entire organization.

**Planning** Selecting a course of action and specifying how the action will be implemented.

**Planning** Developing goals and preparing budgets to achieve those goals.

**Planning budget** A budget created at the beginning of the budgeting period that is valid only for the planned level of activity.

**Planning and control cycle** The flow of management activities through planning, directing and motivating, and controlling, and then back to planning again.

**Practical standards** Standards that allow for normal machine downtime and other work interruptions and that can be attained through reasonable, though highly efficient, efforts by the average worker.

**Production budget** A detailed plan showing the number of units that must be produced during a period in order to satisfy both sales and inventory needs.

**Pro forma statements.** Budgeted financial statements.

**Probability.** Likelihood or chance that an event will occur.

**Probability distribution.** Describes the likelihood (or the probability) that each of the mutually exclusive and collectively exhaustive set of events will occur.

**Production.** Acquiring, coordinating, and assembling resources to produce a product or deliver a service.

**production budget** A budget showing planned output (production) for an upcoming period



**regression analysis** A statistical method for obtaining the unique cost-estimating equation that best fits a set of data points

**Regression analysis.** Statistical method that measures the average amount of change in the dependent variable associated with a unit change in one or more independent variables.

**Rolling budget.** Budget or plan that is always available for a specified future period by adding a period (month, quarter, or year) to the period that just ended. Also called *continuous budget*.

**sales budget** A schedule showing forecasted sales in units and at expected selling prices

**Sales budget** A detailed schedule showing expected sales expressed in both dollars and units.

**Self-imposed budget** A method of preparing budgets in which managers prepare their own budgets. These budgets are then reviewed by higher-level managers, and any issues are resolved by mutual agreement.

**Selling and administrative expense budget** A detailed schedule of planned expenses that will be incurred in areas other than manufacturing during a budget period.

**Sensitivity analysis.** A what-if technique that managers use to calculate how an outcome will change if the original predicted data are not achieved or if an underlying assumption changes.

**sensitivity analysis** The process of selectively varying a key input variable, for example, the discount rate, to identify the range over which a capital-budgeting decision is valid

**simple linear regression** Used to describe regression applications having a single independent variable

**Slope coefficient.** Coefficient term in a cost estimation model that indicates the amount by which total cost changes when a one-unit change occurs in the level of activity within the relevant range.

**Standard.** A carefully determined price, cost, or quantity that is used as a benchmark for judging performance. It is usually expressed on a per unit basis.

**Standard error of the estimated coefficient.** Regression statistic that indicates how much the estimated value of the coefficient is likely to be affected by random factors.

**Standard error of the regression.** Statistic that measures the variance of residuals in a regression analysis.

**standard error of the estimate (SE)** A measure of the accuracy of the regression's estimates

**Statement of cash flows** A financial statement that highlights the major activities that directly and indirectly impact cash flows and hence affect the overall cash balance.

**Static budget.** Budget based on the level of output planned at the start of the budget period.



**strategy** A plan for using resources to achieve sustainable goals within a competitive environment

**Strategy** A “game plan” that enables a company to attract customers by distinguishing itself from competitors.

**Strategy.** Specifies how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its objectives.

**Strategy map.** A diagram that describes how an organization creates value by connecting strategic objectives in explicit cause-and-effect relationships with each other in the financial, customer, internal business process, and learning and growth perspectives.

**Suboptimal decision making.** Decisions in which the benefit to one subunit is more than offset by the costs or loss of benefits to the organization as a whole. Also called *incongruent decision making* or *dysfunctional decision making*.

**SWOT analysis** A systematic procedure for identifying a firm’s critical success factors: its internal strengths and weaknesses, and its external opportunities and threats

**time-series regression** The application of regression analysis to predict future amounts, using prior periods’ data

**trend variable** A variable that takes on values of 1, 2, 3, . . . for each period in sequence

**t-value** A measure of the reliability of each of the independent variables; that is, the degree to which an independent variable has a valid, stable, long-term relationship with the dependent variable

**Uncertainty.** The possibility that an actual amount will deviate from an expected amount.

**what-if analysis** The calculation of an amount given different levels for a factor that influences that amount

**zero-base budgeting (ZBB)** A budgeting process that requires managers to prepare budgets each period from a base of zero



**[1] Gleim #: 5.4.42 -- Source: CMA 1291 4-27**

Automite Company is an automobile replacement parts dealer in a large metropolitan community. Automite is preparing its sales forecast for the coming year. Data regarding both Automite's and industry sales of replacement parts as well as both the used and new automobile sales in the community for the last 10 years have been accumulated. If Automite wants to determine whether its sales of replacement parts are dependent upon the industry sales of replacement parts or upon the sales of used and new automobiles, the company should employ

- A. Simulation techniques.
- B. Correlation and regression analysis.
- C. Statistical sampling.
- D. Time series analysis.

- Answer (A) is **incorrect**. Simulation is a means of experimenting with logical or mathematical models using a computer.
- Answer (B) is **correct**. Correlation and regression analysis can be used to determine whether a relationship exists among two or more variables. The degree of that relationship is assessed by means of correlation analysis. Thus, regressing sales (the dependent variable) on both sales of replacement parts and sales of automobiles (independent variables) determines the extent of the dependence.
- Answer (C) is **incorrect**. Statistical sampling is a means of choosing and analyzing a sample to estimate population characteristics.
- Answer (D) is **incorrect**. Time series or trend analysis regresses the dependent variable on time (the independent variable).

**[2] Gleim #: 5.4.43 -- Source: CMA 0408 1-137**

A company has accumulated data for the last 24 months in order to determine if there is an independent variable that could be used to estimate shipping costs. Three possible independent variables being considered are packages shipped, miles shipped, and pounds shipped. The quantitative technique that should be used to determine whether any of these independent variables might provide a good estimate for shipping costs is

- A. Flexible budgeting.
- B. Linear programming.
- C. Linear regression.
- D. Variable costing.



- Answer (A) is **incorrect**. Flexible budgeting is the calculation of the quantity and cost of inputs that should have been consumed given the achieved level of production.
- Answer (B) is **incorrect**. Linear programming is a mathematical technique used to optimize a linear function subject to certain constraints.
- Answer (C) is **correct**. Regression analysis, also called least-squares analysis, is the process of deriving the linear equation that describes the relationship between two (or more) variables with a nonzero coefficient of correlation.
- Answer (D) is **incorrect**. Variable costing is a costing technique that treats only variable manufacturing costs as product costs.

**[3] Gleim #: 5.4.44 -- Source: CMA 1285 5-27**

The correlation coefficient that indicates the weakest linear association between two variables is

- A. -0.73
- B. -0.11
- C. 0.12
- D. 0.35

- Answer (A) is **incorrect**. This figure signifies a strong negative correlation.
- Answer (B) is **correct**. The correlation coefficient can vary from  $-1$  to  $+1$ . A  $-1$  relationship indicates a perfect negative correlation, and a  $+1$  relationship indicates a perfect positive correlation. A zero correlation coefficient would indicate no linear association between the variables. Thus, the correlation coefficient that is nearest to zero indicates the weakest linear association. Of the options given in the question, the correlation coefficient that is nearest to zero is  $-0.11$ .
- Answer (C) is **incorrect**. This figure indicates a slightly stronger correlation than the weakest linear association.
- Answer (D) is **incorrect**. This figure indicates a considerably stronger correlation.

**[4] Gleim #: 5.4.45 -- Source: CMA 1289 5-14**

Correlation is a term frequently used in conjunction with regression analysis and is measured by the value of the coefficient of correlation,  $r$ . The best explanation of the value  $r$  is that it

- A. Is always positive.
  - B. Interprets variances in terms of the independent variable.
  - C. Ranges in size from negative infinity to positive infinity.
  - D. Is a measure of the relative relationship between two variables.
- Answer (A) is **incorrect**. The coefficient is negative if the relationship between the variables is inverse.
  - Answer (B) is **incorrect**. The coefficient relates the two variables to each other.
  - Answer (C) is **incorrect**. The size of the coefficient varies between  $-1.0$  and  $+1.0$ .
  - Answer (D) is **correct**. The coefficient of correlation ( $r$ ) measures the strength of the linear relationship between the dependent and independent variables. The magnitude of  $r$  is independent of the scales of measurement of  $x$  and  $y$ . The coefficient lies between  $-1.0$  and  $+1.0$ . A value of zero indicates no linear relationship between the  $x$  and  $y$  variables. A value of  $+1.0$  indicates a perfectly direct relationship, and a value of  $-1.0$  indicates a perfectly inverse relationship.

**[5] Gleim #: 5.4.46 -- Source: CMA 697 4-26**

A regression equation

- A. Estimates the dependent variables.
  - B. Encompasses factors outside the relevant range.
  - C. Is based on objective and constraint functions.
  - D. Estimates the independent variable.
- Answer (A) is **correct**. Regression analysis is used to find an equation for the linear relationship among variables. The behavior of the dependent variable is explained in terms of one or more independent variables. Regression analysis is often used to estimate a dependent variable (such as cost) given a known independent variable (such as production).
  - Answer (B) is **incorrect**. Regression results are limited to observations within the relevant range.
  - Answer (C) is **incorrect**. Regression analysis does not use constraint functions.

- Answer (D) is **incorrect**. The dependent variable is estimated using regression analysis.

**[7] Gleim #: 5.4.48 -- Source: CMA 1289 4-11**

All of the following are assumptions underlying the validity of linear regression output **except**

- A. The errors are normally distributed.
- B. The mean of the errors is zero.
- C. Certainty.
- D. The standard deviation of the errors is constant.

- Answer (A) is **incorrect**. It is an assumption of the regression model.
- Answer (B) is **incorrect**. It is an assumption of the regression model.
- Answer (C) is **correct**. Linear regression is based on several assumptions; for example, that there is no change in the environment, that errors in the values of the dependent variables are normally distributed with a mean of zero, that the standard deviation of these errors is constant, that the values of the dependent variables are statistically independent of each other, and that the independent variables are not correlated with each other. However, regression is only a means of predicting the future; it cannot provide certainty.
- Answer (D) is **incorrect**. It is an assumption of the regression model.

**[8] Gleim #: 5.4.49 -- Source: CMA 1290 4-27**

In the standard regression equation  $y = a + bx$ , the letter  $b$  is best described as a(n)

- A. Independent variable.
- B. Dependent variable.
- C. Constant coefficient.
- D. Variable coefficient.

- Answer (A) is **incorrect**. The independent variable is  $x$ .
- Answer (B) is **incorrect**. The dependent variable is  $y$ .
- Answer (C) is **incorrect**. The constant coefficient is  $a$ .
- Answer (D) is **correct**. In the standard regression equation,  $b$  represents the variable coefficient. For example, in a cost determination regression,  $y$  equals total costs,  $b$  is the variable cost per unit,  $x$  is the number of units produced, and  $a$  is fixed cost.

**[Fact Pattern #1]**

In preparing the annual profit plan for the coming year, Wilkens Company wants to determine the cost behavior pattern of the maintenance costs. Wilkens has decided to use linear regression by employing the equation  $y = a + bx$  for maintenance costs. The prior year's data regarding maintenance hours and costs, and the results of the regression analysis, are given below and in the opposite column.

		Hours of Activity	Maintenance Costs
	January	480	\$ 4,200
	February	320	3,000
	March	400	3,600
	April	300	2,820
	May	500	4,350
	June	310	2,960
	July	320	3,030
	August	520	4,470
	September	490	4,260
Average cost per hour	\$9.00	October	4,050
$a$	684.65	November	3,300
$b$	7.2884	December	3,160
Standard error of $a$	49.515	Sum	<u>43,200</u>
Standard error of $b$	.12126	Average	<u>\$ 3,600</u>
Standard error of the estimate	34.469		
$r^2$	.99724		

**[9] Gleim #: 5.4.50 -- Source: CMA 1290 4-29**

(Refers to Fact Pattern #1)

Based upon the data derived from the regression analysis, 420 maintenance hours in a month would mean that Wilkens Co.'s maintenance costs (rounded to the nearest dollar) would be budgeted at

- A. \$3,780
- B. \$3,600
- C. \$3,790
- D. \$3,746

- Answer (A) is **incorrect**. The budgeted maintenance costs are \$3,746.
- Answer (B) is **incorrect**. The budgeted maintenance costs are \$3,746.
- Answer (C) is **incorrect**. The budgeted maintenance costs are \$3,746.

- Answer (D) is **correct**. Substituting the given data into the regression equation results in a budgeted cost of \$3,746 (rounded to the nearest dollar).

$$y = a + bx$$

$$y = 684.65 + 7.2884(420)$$

$$y = \$3,746$$

**[10] Gleim #: 5.4.51 -- Source: CMA 1290 4-30**

(Refers to Fact Pattern #1)

The percentage of Wilkens Co.'s total variance that can be explained by the regression equation is

- A. 99.724%
- B. 69.613%
- C. 80.982%
- D. 99.862%

- Answer (A) is **correct**. The coefficient of determination ( $r^2$ ) measures the percentage of the total variance in cost that can be explained by the regression equation. If the coefficient of determination is .99724, 99.724% of the variance is explained by the regression equation. Thus, the values in the regression equation explain virtually the entire amount of total cost.
- Answer (B) is **incorrect**. The percentage of the total variance explained by the regression equation is 99.724%, which corresponds to the coefficient of determination ( $r^2$ ), or .99724.
- Answer (C) is **incorrect**. The percentage of the total variance explained by the regression equation is 99.724%, which corresponds to the coefficient of determination ( $r^2$ ), or .99724.
- Answer (D) is **incorrect**. The percentage of the total variance explained by the regression equation is 99.724%, which corresponds to the coefficient of determination ( $r^2$ ), or .99724.

**[11] Gleim #: 5.4.52 -- Source: CMA 1290 4-28**

The letter  $x$  in the standard regression equation is best described as a(n)

- A. Independent variable.
- B. Dependent variable.
- C. Constant coefficient.
- D. Coefficient of determination.

- Answer (A) is **correct**. The letter  $x$  in the standard regression equation is the independent variable. For example, in a regression to determine the total cost of production,  $x$  equals units produced.
- Answer (B) is **incorrect**. The dependent variable is  $y$ .
- Answer (C) is **incorrect**. The constant coefficient is  $a$ .
- Answer (D) is **incorrect**. The variable  $r^2$  is the coefficient of determination.

[18] Gleim #: 5.4.59 -- Source: CMA 1292 3-3

In determining cost behavior in business, the cost function is often expressed as  $y = a + bx$ . Which one of the following cost estimation methods should **not** be used in estimating fixed and variable costs for the equation?

- A. Graphic method.
- B. Simple regression.
- C. High and low point method.
- D. Multiple regression.

- Answer (A) is **incorrect**. The graphic approach can be used to estimate a linear function.
- Answer (B) is **incorrect**. Simple regression, which is based on one independent variable, is the best means of expressing a linear cost function.
- Answer (C) is **incorrect**. The high-low method, although unsophisticated, can often give a good approximation of a linear cost function.
- Answer (D) is **correct**. Regression analysis can be used to find an equation for the linear relationship among variables. However, multiple regression is not used to generate an equation of the type  $y = a + bx$  because multiple regression has more than one independent variable. In other words, a multiple regression equation would take the form  $y = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots$ .

[19] Gleim #: 5.4.60 -- Source: CMA 0408 1-136

For cost estimation, simple regression differs from multiple regression in that simple regression uses only

- A. One dependent variable, while multiple regression uses all available data to estimate the cost function.
  - B. Dependent variables, while multiple regression can use both dependent and independent variables.
  - C. One independent variable, while multiple regression uses more than one independent variable.
  - D. One dependent variable, while multiple regression uses more than one dependent variable.
- Answer (A) is **incorrect**. Simple regression uses the algebraic formula for a straight line,  $y = a + bx$ , where  $x$  is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ( $y = a + b_1x_1 + b_2x_2 + b_3x_3 + \text{etc.}$ ).
  - Answer (B) is **incorrect**. Simple regression uses the algebraic formula for a straight line,  $y = a + bx$ , where  $x$  is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ( $y = a + b_1x_1 + b_2x_2 + b_3x_3 + \text{etc.}$ ).
  - Answer (C) is **correct**. Simple regression uses the algebraic formula for a straight line,  $y = a + bx$ , where  $x$  is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ( $y = a + b_1x_1 + b_2x_2 + b_3x_3 + \text{etc.}$ ).
  - Answer (D) is **incorrect**. Simple regression uses the algebraic formula for a straight line,  $y = a + bx$ , where  $x$  is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ( $y = a + b_1x_1 + b_2x_2 + b_3x_3 + \text{etc.}$ ). Both methods use only one dependent variable.



**[20] Gleim #: 5.4.61 -- Source: CMA 0408 1-138**

Slawford Manufacturing developed the following multiple regression equation, utilizing many years of data, and uses it to model, or estimate, the cost of its product.

$$\text{Cost} = \text{FC} + (a \times L) + (b \times M)$$

Where: FC = fixed costs

L = labor rate per hour

M = material cost per pound

Which one of the following changes would have the greatest impact on invalidating the results of this model?

- A. A significant reduction in factory overheads, which are a component of fixed costs.
- B. Renegotiation of the union contract calling for much higher wage rates.
- C. A large drop in material costs, as a result of purchasing the material from a foreign source.
- D. A significant change in labor productivity.

- Answer (A) is **incorrect**. Fixed cost is one of the variables, and a difference between expected and actual value for the variables is an integral part of multiple regression.
- Answer (B) is **incorrect**. The wage rate is one of the variables, and a difference between expected and actual value for the variables is an integral part of multiple regression.
- Answer (C) is **incorrect**. Materials cost is one of the variables, and a difference between expected and actual value for the variables is an integral part of multiple regression.
- Answer (D) is **correct**. In multiple regression, a large difference between the expected value and the actual value of one of the coefficients has the most impact in rendering the model invalid. A change in costs would be incorporated into the equation automatically, but a change in productivity per hour would not.

**[21] Gleim #: 5.4.62 -- Source: CMA 0408 1-139**

In order to analyze sales as a function of advertising expenses, the sales manager of Smith Company developed a simple regression model. The model included the following equation, which was based on 32 monthly observations of sales and advertising expenses with a related coefficient of determination of .90.

$$\text{Sales} = \$10,000 + (2.5 \times \text{Advertising expenses})$$

If Smith Company's advertising expenses in one month amounted to \$1,000, the related point estimate of sales would be

- A. \$2,500
- B. \$11,250
- C. \$12,250
- D. \$12,500

- Answer (A) is **incorrect**. The amount of \$2,500 includes only the advertising expense.
- Answer (B) is **incorrect**. The amount of \$11,250 results from improperly multiplying the answer by the coefficient of determination.
- Answer (C) is **incorrect**. The amount of \$12,250 results from improperly applying the coefficient of determination to the advertising expense.
- Answer (D) is **correct**. The simple regression equation can be solved as follows:

$$\begin{aligned}\text{Sales} &= \$10,000 + (2.5 \times \text{Advertising expenses}) \\ &= \$10,000 + (2.5 \times \$1,000) \\ &= \$10,000 + \$2,500 \\ &= \$12,500\end{aligned}$$

[22] Gleim #: 5.4.63 -- Source: CMA 0408 1-140

The results of regressing Y against X are as follows:

	<u>Coefficient</u>
Intercept	5.23
Slope	1.54

When the value of X is 10, the estimated value of Y is

- A. 6.77
- B. 8.05
- C. 20.63
- D. 53.84

- Answer (A) is **incorrect**. The figure 6.77 results from simply adding the intercept and slope.
- Answer (B) is **incorrect**. The figure 8.05 results from simply multiplying the intercept and slope.
- Answer (C) is **correct**. A simple regression can be calculated using the formula for a straight line:

$$y = a + bx$$

Where: y = the dependent variable

a = the Y-axis intercept

b = the slope of the regression line

x = the independent variable

Solving with the information given yields the following results:

$$\begin{aligned} y &= a + bx \\ &= 5.23 + (1.54 \times 10) \\ &= 5.23 + 15.4 \\ &= 20.63 \end{aligned}$$

- Answer (D) is **incorrect**. The figure 53.84 results from transposing the intercept and slope.

[1] Gleim #: 5.5.64 -- Source: CMA 697 4-25

Corrigan Industries is preparing a bid for a special project requiring the production of 35,000 units. The engineering personnel have advised that the units can be produced in groups with the first group consisting of 1,000 units. A review of prior experience indicates that the direct labor time needed per unit will be progressively smaller by a constant percentage rate as experience is gained in the production process. The quantitative method that would best estimate Corrigan's total cost for the project is

- A. Linear programming.
- B. Dynamic programming.
- C. Learning curve analysis.
- D. Time series analysis.

- Answer (A) is **incorrect**. Linear programming is an optimizing model used to determine a minimum or maximum, e.g., of a cost or revenue function, given certain constraints on resources.
- Answer (B) is **incorrect**. Dynamic programming is an approach to solving problems, not a particular algorithm. It divides a large mathematical model into smaller, more manageable pieces in such a way that, once the smaller problems have been solved, the result is the optimal solution to the overall model.
- Answer (C) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. Thus, the time required to perform a given task becomes progressively shorter. Ordinarily, the learning curve is expressed as a percentage of reduced time to complete a task for each doubling of cumulative production.
- Answer (D) is **incorrect**. Time series analysis applies to data gathered at successive moments in time. It is a forecasting technique in which the dependent variable is regressed on time.

[2] Gleim #: 5.5.65 -- Source: CMA 1293 4-24

The average labor cost per unit for the first batch produced by a new process is \$120. The cumulative average labor cost after the second batch is \$72 per product. Using a batch size of 100 and assuming the learning curve continues, the total labor cost of four batches will be

- A. \$4,320
- B. \$10,368
- C. \$2,592
- D. \$17,280

- Answer (A) is **incorrect**. The cost of the items in the fourth batch equals \$4,320.
- Answer (B) is **incorrect**. The amount of \$10,368 is based on the assumption that the cumulative average unit labor cost is reduced by the learning curve percentage with each batch, not each doubling of output.
- Answer (C) is **incorrect**. The amount of \$2,592 represents the labor cost of 100 units at the unit rate expected after another doubling of production to eight batches.
- Answer (D) is **correct**. The learning curve reflects the increased rate at which people perform tasks as they gain experience. The time required to perform a given task becomes progressively shorter. Ordinarily, the curve is expressed in a percentage of reduced time to complete a task for each doubling of cumulative production. One common assumption in a learning curve model is that the cumulative average time (and labor cost) per unit is reduced by a certain percentage each time production doubles. Given a \$120 cost per unit for the first 100 units and a \$72 cost per unit when cumulative production doubled to 200 units, the learning curve percentage must be 60% ( $\$72 \div \$120$ ). If production is again doubled to 400 units (four batches), the average unit labor cost should be \$43.20 ( $\$72 \times 60\%$ ). Hence, total labor cost for 400 units is estimated to be \$17,280 ( $400 \text{ units} \times \$43.20$ ).

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**[Fact Pattern #1]**

Moss Point Manufacturing recently completed and sold an order of 50 units that had costs as shown in the next column.

Direct materials	\$ 1,500
Direct labor ( $\$8.50 \times 1,000$ hours)	8,500
Variable overhead ( $1,000 \text{ hours} \times \$4.00$ )*	4,000
Fixed overhead**	<u>1,400</u>
	<u><u>\$15,400</u></u>

The company has now been requested to prepare a bid for 150 units of the same product.

\*Applied on the basis of direct labor hours.

\*\*Applied at the rate of 10% of variable cost.

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[3] Gleim #: 5.5.66 -- Source: CMA 1288 5-19

(Refers to Fact Pattern #1)

If an 80% learning curve is applicable, Moss Point's total cost on this order would be estimated at

- A. \$26,400
- B. \$32,000
- C. \$38,000
- D. \$41,800

- Answer (A) is **correct**. Assuming that the cumulative average time model applies, an 80% learning curve means that the cumulative average time per unit (and labor cost, given a constant labor rate) declines by 20% each time unit output doubles in the early stages of production. The first lot size was 50 units, which was produced at a total cost of \$15,400 (\$1,500 for materials and \$13,900 for labor and overhead). Materials costs are strictly variable and should remain proportional to production. The labor (\$8,500) and variable overhead (\$4,000) costs (labor-related), however, will be affected by the learning curve. The average cost per lot for labor and variable overhead after 100 units have been produced should be 80% of the costs of the first lot of 50 units. Thus, the average labor and variable overhead cost per 50-unit lot will be \$10,000 ( $\$12,500 \times 80\%$ ). If production doubles again (to a total production of 200 units or four lots of 50 each), the cumulative average cost for labor and variable overhead will be \$8,000 per lot ( $\$10,000 \times 80\%$ ). Given four lots of 50 each, at an average cost of \$8,000 per lot, the total cost for labor and variable overhead must be \$32,000. Adding \$6,000 for raw materials (\$1,500 per 50-unit lot) gives a total variable cost of \$38,000 for 200 units. Fixed overhead is 10% of total variable cost, so total cost is \$41,800. The total cost for the last 150 units is \$26,400 ( $\$41,800 - \$15,400$ ).
- Answer (B) is **incorrect**. The amount of \$32,000 is the total cost for labor and variable overhead for 200 units.
- Answer (C) is **incorrect**. The amount of \$38,000 is the total variable cost for 200 units.
- Answer (D) is **incorrect**. The amount of \$41,800 is the total cost for 200 units.

[4] Gleim #: 5.5.67 -- Source: CMA 1288 5-20

(Refers to Fact Pattern #1)

If Moss Point had experienced a 70% learning curve, the bid for the 150 units would

- A. Show a 30% reduction in the total direct labor hours required with no learning curve.
  - B. Include increased fixed overhead costs.
  - C. Be 10% lower than the total bid at an 80% learning curve.
  - D. Include 6.40 direct labor hours per unit at \$8.50 per hour.
- Answer (A) is **incorrect**. With no learning curve effect, estimated total hours would be 4,000 instead of 1,960, a change of more than 50%.
  - Answer (B) is **incorrect**. Fixed costs applied per lot would decline because they are based on labor hours, which are declining.
  - Answer (C) is **incorrect**. Due to the cumulative nature of a learning curve, a 10% change in the learning curve does not result in a 10% change in direct labor costs. Given an 80% learning curve, estimated total hours would be 2,560 instead of 1,960.
  - Answer (D) is **correct**. The sum of the direct labor hours for the initial lot of 50 units was 1,000. A second lot of 50 would reduce the cumulative hours per lot to 700 (70%  $\times$  1,000 hours). A doubling to four lots would reduce the cumulative hours per lot to 490 (70%  $\times$  700 hours). Thus, for an output of 200 units, the total hours worked would be 1,960 (4 lots  $\times$  490 hours). Subtracting the 1,000 hours required for the first 50 units from the 1,960-hour total gives 960 hours for the last 150 units. Dividing 960 hours by 150 units produces a per-unit time of 6.4 hours.

[5] Gleim #: 5.5.68 -- Source: CMA 692 4-5

Lake Corporation manufactures specialty components for the electronics industry in a highly labor intensive environment. Arc Electronics has asked Lake to bid on a component that Lake made for Arc last month. The previous order was for 80 units and required 120 hours of direct labor to manufacture. Arc would now like 240 additional components. Lake experiences an 80% learning curve on all of its jobs. The number of direct labor hours needed for Lake to complete the 240 additional components is

- A. 360.0
  - B. 187.2
  - C. 307.2
  - D. 256.0
- Answer (A) is **incorrect**. Assuming no learning curve effect results in 360 hours.



- Answer (B) is **correct**. One common assumption made in a learning curve model is that the cumulative average time per unit is reduced by a certain percentage each time production doubles. An 80% learning curve results in the following performance for the lots shown:

Units	Cumulative Average Hours
80	1.5 hours ( $120 \div 80$ )
160	1.2 hours ( $1.5 \times .8$ )
320	.96 hours ( $1.2 \times .8$ )

Thus, to produce 320 units, total production time will be 307.2 hours ( $320 \times .96$ ). The total time for the last 240 units will be 187.2 hours ( $307.2 - 120$ ).

- Answer (C) is **incorrect**. The total time for completing 320 units is 307.2 hours.
- Answer (D) is **incorrect**. The figure of 256 hours is a nonsense answer.

**[11] Gleim #: 5.5.74 -- Source: CMA 696 4-7**

It is estimated that a particular manufacturing job is subject to an 80% learning curve. The first unit required 50 labor hours to complete. What is the cumulative average time per unit after completing four units?

- A. 50.0 hours.
- B. 40.0 hours.
- C. 32.0 hours.
- D. 30.0 hours.

- Answer (A) is **incorrect**. The time for the first unit is 50 hours.
- Answer (B) is **incorrect**. The cumulative average completion time for two units is 40 hours.
- Answer (C) is **correct**. Learning curve models reflect the increased rate at which people perform tasks as they gain experience. One common assumption is that the cumulative average time per unit is reduced by a certain percentage when production doubles during the early stages of production. An 80% learning curve indicates that a doubling of production reduces the time required by 20%. For example, if the first unit requires 50 hours, the cumulative average completion time is 40 hours ( $80\% \times 50$  hours) for two units and 32 hours ( $80\% \times 40$  hours) for four units.
- Answer (D) is **incorrect**. The time necessary to complete the second unit is 30 hours.

**[12] Gleim #: 5.5.75 -- Source: CMA 1291 4-22**

A company plans to bid on a special project that calls for a total of 24,000 units. The units will be produced in lots, with the first lot consisting of 750 units. Based on prior experience, the direct labor time needed per unit of product will be progressively smaller by a constant percentage rate as experience is gained in the manufacturing process. The quantitative method that would best estimate the company's total cost for the project is

- A. Learning curve techniques.
- B. Differential calculus.
- C. Discounted cash flow techniques.
- D. Linear programming.

- Answer (A) is **correct**. Learning curves reflect the increased rate at which people perform as they gain experience at a new task. Because the time to perform the task becomes progressively shorter in the early stages of a new activity, the direct labor costs involved decline. The curve is often expressed as a percentage reduction in time for each doubling of cumulative production. Two models are in common use. One assumes that the cumulative average time per unit declines by a constant percentage each time cumulative production doubles. The other assumes that the time required for the last unit declines by a constant percentage when cumulative production doubles.
- Answer (B) is **incorrect**. Differential calculus is used primarily to identify the maxima or minima of curvilinear functions.
- Answer (C) is **incorrect**. Discounted cash flow techniques are used to evaluate capital investment decisions.
- Answer (D) is **incorrect**. Linear programming is a tool for optimizing a cost or profit function given scarce resources and specified restraints.

**[13] Gleim #: 5.5.76 -- Source: CMA 1294 4-28**

Seacraft, Inc., received a request for a competitive bid for the sale of one of its unique boating products with a desired modification. Seacraft is now in the process of manufacturing this product but with a slightly different modification for another customer. These unique products are labor intensive and both will have long production runs. Which one of the following methods should Seacraft use to estimate the cost of the new competitive bid?

- A. Expected value analysis.
- B. Learning curve analysis.
- C. Regression analysis.
- D. Continuous probability simulation.

- Answer (A) is **incorrect**. Expected value analysis selects the best alternative for decisions involving risk by multiplying the probability of each outcome by its payoff, and summing the products.
- Answer (B) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. The time required to perform a given task becomes progressively shorter as the workers better learn their jobs. Ordinarily, the curve is expressed as a percentage of reduced time to complete a task for each doubling of cumulative production. This methodology is appropriate when submitting a bid for a product for which the firm already has experience. The experience should lead to shorter production time and lower costs.
- Answer (C) is **incorrect**. Regression analysis is used to find an equation for the linear relationships among variables.
- Answer (D) is **incorrect**. Simulation would not be appropriate when a single project is being bid upon.

**[14] Gleim #: 5.5.77 -- Source: CMA 1289 4-7**

The technique used to predict the change in direct labor hours as a new process stabilizes is

- A. Simple regression.
- B. Multiple regression.
- C. Time series analysis.
- D. Learning curve analysis.

- Answer (A) is **incorrect**. Regression analysis explains the correlation of a dependent variable with one or more independent variables. It is based on the linearity of costs, an assumption not required in learning curve analysis.
- Answer (B) is **incorrect**. Multiple regression is used when many causal factors affect the outcome.
- Answer (C) is **incorrect**. Time series analysis is a forecasting method that uses historical data to determine the future values of a variable. A moving average is a simple example. The variation within this data can be accounted for in various ways.

- Answer (D) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. The time to perform a given task becomes progressively shorter during the early stages of production. The curve is expressed as a percentage reduction in time to complete a task for each doubling of cumulative production. A learning curve percentage of 80% is common. One model assumes that the cumulative average time per unit for all production is reduced by a constant percentage. Another assumes that the average time to produce the last unit is reduced by a constant percentage.

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**[Fact Pattern #2]**

LCB, Inc., is preparing a bid to the Department of the Navy to produce engines for rescue boats. The company has manufactured these engines for the Navy for the past 3 years on an exclusive contract and has experienced the following costs:

Cumulative Units Produced	Total Cumulative Costs	
	Materials	Labor
10	\$ 60,000	\$120,000
20	120,000	192,000
40	240,000	307,200

At LCB, variable overhead is applied on the basis of \$1.00 per direct labor dollar. Based on historical costs, LCB knows that the production of 40 engines will incur \$100,000 of fixed overhead costs. The bid request is for an additional 40 units; all companies submitting bids are allowed to charge a maximum of 25% above full cost for each order.

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**[15] Gleim #: 5.5.78 -- Source: CMA 688 5-9**

(Refers to Fact Pattern #2)

In order to ensure that the company would **not** lose money on the project, LCB's minimum bid for the 40 units would be

- A. \$760,800
- B. \$608,640
- C. \$885,800
- D. \$708,640

- Answer (A) is **incorrect**. The amount of \$760,800 equals 125% times \$608,640, which is the full cost without including the fixed cost.

- Answer (B) is **correct**. The company is permitted to bid 25% above full cost (including fixed overhead). Given a learning curve of 80% and a cumulative average unit labor cost for 40 units of \$7,680 ( $\$307,200 \div 40$ ), the additional labor costs for the next 40 units can be determined. Cumulative average unit labor cost for 80 units is estimated to be \$6,144 ( $\$7,680 \times 80\%$ ). Estimated total labor cost for 80 units is \$491,520 (80 units  $\times$  \$6,144). Thus, the incremental labor cost of the last 40 units is expected to be \$184,320 ( $\$491,520 - \$307,200$ ). Variable overhead is \$1 per direct labor dollar, or \$184,320. Adding \$240,000 for materials and \$100,000 for fixed overhead results in a full cost of \$708,640 ( $\$184,320 \text{ DL} + \$184,320 \text{ VOH} + \$240,000 \text{ DM} + \$100,000 \text{ FOH}$ ). However, that amount includes \$100,000 of fixed overhead that would presumably not increase as a result of the production. Thus, if the company obtains the contract at a price of \$608,640 ( $\$708,640 - \$100,000$ ), it will break even. The minimum bid is therefore \$608,640: the incremental cost of labor, variable overhead, and raw materials.
- Answer (C) is **incorrect**. The amount of \$885,800 equals the maximum bid.
- Answer (D) is **incorrect**. The amount of \$708,640 includes \$100,000 of fixed costs.

**[16] Gleim #: 5.5.79 -- Source: CMA 688 5-7**

(Refers to Fact Pattern #2)

LCB's rate of learning on the 3-year engine contract is

- A. 75.5%
- B. 79.0%
- C. 80.0%
- D. 62.6%

- Answer (A) is **incorrect**. The rate of learning should be determined by calculating the cumulative average unit labor cost for each doubling of production.
- Answer (B) is **incorrect**. The rate of learning should be determined by calculating the cumulative average unit labor cost for each doubling of production.
- Answer (C) is **correct**. The learning curve reflects a percentage reduction in time to complete a task for each doubling of cumulative production. An analysis of the materials costs shows that these costs are strictly variable. However, the labor costs are not strictly variable because the cumulative amount at the end of the second year (for which production is double that of the first year) is not exactly double that for Year One. The same is true of the second- and third-year labor costs. The cumulative average unit labor cost for 10 units was \$12,000 ( $\$120,000 \div 10$ ). The cumulative average unit labor cost for 20 units (representing a doubling of production) was \$9,600 ( $\$192,000 \div 20$ ). The cumulative unit average for the next doubling was \$7,680 ( $\$307,200 \div 40$ ). Since \$9,600 is 80% of \$12,000 and \$7,680 is 80% of \$9,600, an 80% rate of learning occurred.

- Answer (D) is **incorrect**. The rate of learning should be determined by calculating the cumulative average unit labor cost for each doubling of production.

**[17] Gleim #: 5.5.80 -- Source: CMA 688 5-8**

(Refers to Fact Pattern #2)

The maximum bid price that LCB, Inc., could submit to the Department of the Navy for the 40 units is

- A. \$760,800
- B. \$608,640
- C. \$885,800
- D. \$708,640

- Answer (A) is **incorrect**. The amount of \$760,800 equals 125% times \$608,640, which is full cost without including \$100,000 fixed overhead.
- Answer (B) is **incorrect**. The amount of \$608,640 is full cost without including \$100,000 fixed overhead.
- Answer (C) is **correct**. The company is permitted to bid 25% above full cost (including fixed overhead). Given a learning curve of 80% and a cumulative average unit labor cost for 40 units of \$7,680 ( $\$307,200 \div 40$ ), the additional labor costs for the next 40 units can be determined. Cumulative average unit labor cost for 80 units is estimated to be \$6,144 ( $\$7,680 \times 80\%$ ). Estimated total labor cost for 80 units is \$491,520 ( $80 \text{ units} \times \$6,144$ ). Thus, the incremental labor cost of the last 40 units is expected to be \$184,320 ( $\$491,520 - \$307,200$ ). Variable overhead is \$1 per direct labor dollar, or \$184,320. Adding \$240,000 for materials and \$100,000 for fixed overhead results in a full cost of \$708,640 ( $\$184,320 \text{ DL} + \$184,320 \text{ VOH} + \$240,000 \text{ DM} + \$100,000 \text{ FOH}$ ). Consequently, the bid price should be \$885,800 ( $\$708,640 \text{ full cost} \times 125\%$ ).
- Answer (D) is **incorrect**. The amount of \$708,640 equals full cost. The maximum bid price equals full cost times 125%.

**[25] Gleim #: 5.5.88 -- Source: CMA 1289 4-10**

Learning curves are best used to predict

- A. Unit material costs.
- B. Overhead variances.
- C. Total unit costs.
- D. Unit direct labor costs.

- Answer (A) is **incorrect**. Unit material costs typically do not decline as workers learn their jobs.
- Answer (B) is **incorrect**. Variances are by definition unpredictable. Otherwise, the standards would be changed to avoid the variance.
- Answer (C) is **incorrect**. Learning curves apply only to labor efficiency and are not effective predictors of total unit costs or unit variable costs.
- Answer (D) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. Thus, they are useful in predicting unit direct labor costs.

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**[Fact Pattern #3]**

Aerosub, Inc., has developed a new product for spacecraft that includes the production of a complex part. The manufacture of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. Management projects an 80% learning curve and wants to produce a total of eight units.

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**[26] Gleim #: 5.5.89 -- Source: CMA 0408 1-142**

(Refers to Fact Pattern #3)

Upon completion of the eighth unit, Aerosub's cumulative average direct labor hours required per unit of the product will be

- A. 5,120 hours.
- B. 6,400 hours.
- C. 8,000 hours.
- D. 10,000 hours.



- Answer (A) is **correct**. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. A common assumption is that the number of hours required for each doubling of output will be 80% of the hours required for the previous doubling. The effects of Aerosub's projected learning curve on this product can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Labor Hours
1	1	10,000
2	2	8,000 (10,000 × 80%)
3	4	6,400 (8,000 × 80%)
4	8	5,120 (6,400 × 80%)

- Answer (B) is **incorrect**. The projected number of hours after four units is 6,400.
- Answer (C) is **incorrect**. The projected number of hours after two units is 8,000.
- Answer (D) is **incorrect**. The number 10,000 results from failing to take the learning curve effect into account at all.

**[27] Gleim #: 5.5.90 -- Source: CMA 0408 1-145**

(Refers to Fact Pattern #3)

Upon completion of the eighth unit, Aerosub's cumulative direct labor hours will be

- A. 29,520 hours.
- B. 40,960 hours.
- C. 64,000 hours.
- D. 80,000 hours.

- Answer (A) is **incorrect**. The figure of 29,520 results from improperly summing the cumulative average labor hour figures.

- Answer (B) is **correct**. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. A common assumption is that the number of hours required for each doubling of output will be 80% of the hours required for the previous doubling. The effects of Aerosub's projected learning curve on this product can be calculated as follows:

<u>Batch</u>	<u>Cumulative Units Produced</u>	<u>Cumulative Average Labor Hours</u>	<u>Cumulative Total Labor Hours</u>
1	1	10,000	10,000
2	2	8,000 (10,000 × 80%)	16,000
3	4	6,400 (8,000 × 80%)	25,600
4	8	5,120 (6,400 × 80%)	40,960

- Answer (C) is **incorrect**. The figure of 64,000 results from improperly multiplying the cumulative number of units produced by the 10,000 hours spent on the first batch, then multiplying by the learning curve percentage.
- Answer (D) is **incorrect**. The figure of 80,000 results from improperly multiplying the cumulative number of units produced by the 10,000 hours spent on the first batch.

**[28] Gleim #: 5.5.91 -- Source: CMA 0408 1-149**

(Refers to Fact Pattern #3)

After completing the first unit, the estimated total direct labor hours Aerosub will require to produce the seven additional units will be

- A. 30,960 hours.
- B. 40,960 hours.
- C. 56,000 hours.
- D. 70,000 hours.

- Answer (A) is **correct**. The cumulative total hours spent on the units can be calculated as follows:

<u>Batch</u>	<u>Cumulative Units Produced</u>	<u>Cumulative Average Labor Hours</u>	<u>Cumulative Total Labor Hours</u>
1	1	10,000	10,000
2	2	8,000 (10,000 × 80%)	16,000
3	4	6,400 (8,000 × 80%)	25,600
4	8	5,120 (6,400 × 80%)	40,960

Since it took a total of 40,960 hours to complete all eight units and 10,000 to complete the first one, units 2 through 8 took 30,960 hours (40,960 – 10,000).

- Answer (B) is **incorrect**. The figure 40,960 is the number of hours to complete all eight units.
- Answer (C) is **incorrect**. The figure 56,000 results from improperly multiplying the seven units by the 8,000 average labor hours consumed in producing the second batch.
- Answer (D) is **incorrect**. The figure 70,000 results from improperly multiplying the seven units by the 10,000 average labor hours consumed in producing the first unit.

**[29] Gleim #: 5.5.92 -- Source: CMA 0408 1-144**

A manufacturing company has the opportunity to submit a bid for 20 units of a product on which it has already produced two 10-unit lots. The production manager believes that the learning experience observed on the first two lots will continue for at least the next two lots. The direct labor required on the first two lots was as follows:

- 5,000 direct labor hours for the first lot of 10 units
- 3,000 additional direct labor hours for the second lot of 10 units

The learning rate experienced by the company on the first two lots of this product is

- A. 40.0%
- B. 60.0%
- C. 62.5%
- D. 80.0%

- Answer (A) is **incorrect**. This percentage results from improperly dividing the 3,000 hours spent on the second lot by the 5,000 hours spent on the first lot and taking the complement.

- Answer (B) is **incorrect**. This percentage results from improperly dividing the 3,000 hours spent on the second lot by the 5,000 hours spent on the first lot.
- Answer (C) is **incorrect**. This percentage results from improperly dividing the 5,000 hours spent on the first lot by the 8,000 total hours spent on both lots.
- Answer (D) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. For this company, a total of 8,000 hours was spent to complete two lots of product. The cumulative average spent on the two lots was therefore 4,000 hours per lot ( $8,000 \div 2$ ). This cumulative average of 4,000 is 80% of the 5,000 hours that were spent on the first lot. The learning curve is therefore 80%.

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**[Fact Pattern #4]**

Proper Propeller, Inc., plans to manufacture a newly designed high-technology propeller for airplanes. Proper Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Proper Propeller estimates a 70% cumulative learning curve and has projected the following costs:

Cumulative Number of Units Produced	Manufacturing Projections	
	Average Cost per Unit	Total Costs
1	\$20,000	\$20,000
2	14,000	28,000

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**[30] Gleim #: 5.5.93 -- Source: CMA 0408 1-148**

(Refers to Fact Pattern #4)

If Proper Propeller produces eight units, the average manufacturing cost per unit will be

- A. \$1,647
- B. \$6,860
- C. \$9,800
- D. \$14,000

- Answer (A) is **incorrect**. The amount of \$1,647 is the cumulative average after eight batches, not eight units.

- Answer (B) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. In this situation, the company is assuming that the total costs required for each doubling of output will be 70% of the costs required for the previous doubling. The effects of Proper Propeller's projected learning curve can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Cost
1	1	\$20,000
2	2	\$14,000 ( $\$20,000 \times 70\%$ )
3	4	\$ 9,800 ( $\$14,000 \times 70\%$ )
4	8	\$ 6,860 ( $\$9,800 \times 70\%$ )

- Answer (C) is **incorrect**. The amount of \$9,800 is the cumulative average cost after four units.
- Answer (D) is **incorrect**. The amount of \$14,000 is the cumulative average cost after two units.

**[31] Gleim #: 5.5.94 -- Source: CMA 0408 1-146**

(Refers to Fact Pattern #4)

If Proper Propeller produces eight units, the total manufacturing cost will be

- A. \$50,660
- B. \$54,880
- C. \$62,643
- D. \$112,000

- Answer (A) is **incorrect**. The amount of \$50,660 results from improperly summing the cumulative average cost figures.

- Answer (B) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. In this situation, the company is assuming that the total costs required for each doubling of output will be 70% of the costs required for the previous doubling. The effects of Proper Propeller's projected learning curve can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Cost	Cumulative Total Cost
1	1	\$20,000	\$20,000
2	2	\$14,000 ( $\$20,000 \times 70\%$ )	28,000
3	4	\$9,800 ( $\$14,000 \times 70\%$ )	39,200
4	8	\$6,860 ( $\$9,800 \times 70\%$ )	54,880

- Answer (C) is **incorrect**. The amount of \$62,643 results from using an incorrect learning curve.
- Answer (D) is **incorrect**. The amount of \$112,000 results from ignoring the learning curve after the second unit.

**[32] Gleim #: 5.5.95 -- Source: CMA 0408 1-151**

(Refers to Fact Pattern #4)

After completing production of the first propeller, the estimated cost for Proper Propeller to fill an order for seven additional propellers is

- A. \$34,880
- B. \$54,880
- C. \$92,000
- D. \$98,000

- Answer (A) is **correct**. The effects of Proper Propeller's projected learning curve can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Cost	Cumulative Total Cost
1	1	\$20,000	\$20,000
2	2	\$14,000 ( $\$20,000 \times 70\%$ )	28,000
3	4	\$9,800 ( $\$14,000 \times 70\%$ )	39,200
4	8	\$6,860 ( $\$9,800 \times 70\%$ )	54,880

Since eight propellers require \$54,880 and the first one off the assembly line cost \$20,000, the cost of units 2 through 8 will be \$34,880 ( $\$54,880 - \$20,000$ ).

- Answer (B) is **incorrect**. The amount of \$54,880 is the cost of all eight propellers.
- Answer (C) is **incorrect**. The amount of \$92,000 results from assuming no learning curve after the second unit.
- Answer (D) is **incorrect**. The amount of \$98,000 results from ignoring the effect of the learning curve.



**[33] Gleim #: 5.5.96 -- Source: CMA 0408 1-147**

Martin Fabricating uses a cumulative average-time learning curve model to monitor labor costs. Data regarding two recently completed batches of a part that is used in tractor-trailer rigs is as follows:

Batch Number	Number of Units	Cumulative Average Hours Per Unit
1	50	20
2	50	16

If the same rate of learning continues for the next several batches produced, which of the following best describes (1) the type (i.e., degree) of learning curve that the firm is experiencing and (2) the average hours per unit for units included in the 201-400 range of units produced (i.e., the last 200 units)?

	Type (Degree) of Learning Curve	Average Hours Per Unit for Units 201-400
A.	20%	10.24
B.	80%	10.24
C.	80%	7.68
D.	20%	3.84

- Answer (A) is **incorrect**. Twenty percent is the complement of the learning curve, and 10.24 is the cumulative average number of hours for all units after the 4th batch, not the time spent on the units in the 4th batch.
- Answer (B) is **incorrect**. The number 10.24 is the cumulative average number of hours after the 4th batch, not the average spent on the units in the batch.
- Answer (C) is **correct**. The learning curve percentage is determined by noting the hours used in producing the first doubling of output as a percentage of the hours used in the original batch. Since 16 is 80% of 20, Martin is experiencing an 80% learning curve. The average hours used to produce the 4th batch of output (units 201 – 400) can be calculated as follows:

Batch	Units in Batch	Cumulative Units Produced	Cumulative Average Labor Hours	Cumulative Total Time	Time Spent on Batch	Time Spent on Units in Batch
1	50	50	20	1,000	1,000	20
2	50	100	16	1,600	600	12
3	100	200	12.8	2,560	960	9.6
4	200	400	10.24	4,096	1,536	7.68

- Answer (D) is **incorrect**. Twenty percent is the complement of the learning curve, and improperly halving the time spent on the units in the 4th batch.

**[34] Gleim #: 5.5.97 -- Source: CMA 0408 1-150**

A manufacturing company required 800 direct labor hours to produce the first lot of four units of a new motor. Management believes that a 90% learning curve will be experienced over four lots of production. How many direct labor hours will be required to manufacture the next 12 units?

- A. 1,792
- B. 1,944
- C. 2,016
- D. 2,160

- Answer (A) is **correct**. With a 90% learning curve, the cumulative production times would be as follows:

Batch	Average Time	Cumulative Time
1	800	800
2	720 (800 × 90%)	1,440
4	648 (720 × 90%)	2,592

Subtracting the 800 hours spent on the first batch from the cumulative time for four batches leaves 1,792 hours for the last three batches (12 units).

- Answer (B) is **incorrect**. A 90% learning curve produces an incremental production time of 1,792.
- Answer (C) is **incorrect**. A 90% learning curve produces an incremental production time of 1,792.
- Answer (D) is **incorrect**. A 90% learning curve produces an incremental production time of 1,792.

**[35] Gleim #: 5.5.98 -- Source: CMA 0408 2-023**

Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?

- A. Company A does not differentiate between variable and fixed overhead in calculating its overhead variances.
- B. Company B uses the prior year's average actual cost as the current year's standard.
- C. Company C investigates only negative variances.
- D. Company D constantly revises standards to reflect learning curves.

- Answer (A) is **incorrect**. Not distinguishing variable from fixed overhead will lead to poor decision making.
- Answer (B) is **incorrect**. Simply using figures from a previous period is an unsatisfactory means of establishing a budget.
- Answer (C) is **incorrect**. Positive variances can be a sign of reduced quality or other concerns.
- Answer (D) is **correct**. Learning curves are an established phenomenon. Workers learn a new task at a predictable rate and the resulting improvements in productivity should be factored into standard setting and variance analysis.

**[36] Gleim #: 5.5.99 -- Source: CMA 0408 1-141**

Which one of the following techniques would most likely be used to analyze reductions in the time required to perform a task as experience with that task increases?

- A. Regression analysis.
- B. Learning curve analysis.
- C. Sensitivity analysis.
- D. Normal probability analysis.

- Answer (A) is **incorrect**. Regression analysis, also called least-squares analysis, is the process of deriving the linear equation that describes the relationship between two (or more) variables with a nonzero coefficient of correlation.
- Answer (B) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience.
- Answer (C) is **incorrect**. Sensitivity analysis is used to reveal how sensitive expected value calculations are to the accuracy of the initial estimates.

- Answer (D) is **incorrect**. Normal probability analysis is used to determinate whether the distribution of a set of data is statistically normal.

**[37] Gleim #: 5.5.100 -- Source: CMA 0408 1-143**

A manufacturing firm plans to bid on a special order of 80 units that will be manufactured in lots of 10 units each. The production manager estimates that the direct labor hours per unit will decline by a constant percentage each time the cumulative quantity of units produced doubles. The quantitative technique used to capture this phenomenon and estimate the direct labor hours required for the special order is

- A. Cost-profit-volume analysis.
- B. The Markov process.
- C. Linear programming analysis.
- D. Learning curve analysis.

- Answer (A) is **incorrect**. Cost-volume-profit analysis is a tool for understanding the interaction of revenues with fixed and variable costs.
- Answer (B) is **incorrect**. The Markov process is used in decision problems in which the probability of the occurrence of a future state depends only on the current state.
- Answer (C) is **incorrect**. Linear programming is a mathematical technique used to optimize a linear function subject to certain constraints.
- Answer (D) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience.

[1] Gleim #: 5.6.101 -- Source: CMA 1294 3-12

Which one of the following is a sales forecasting technique that can be utilized in preparing the annual profit plan?

- A. Linear programming.
- B. Exponential smoothing.
- C. Queuing theory.
- D. Program Evaluation and Review Technique (PERT).

- Answer (A) is **incorrect**. Linear programming is used to minimize a cost function or maximize a revenue or profit function, subject to constraints.
- Answer (B) is **correct**. Exponential smoothing is a sales forecasting technique used to level or smooth variations encountered in a forecast. It also adapts the forecast to changes as they occur. The simplest form of smoothing is the moving average, in which each forecast is based on a fixed number of prior observations. Exponential smoothing is similar to the moving average, but the term "exponential" means that greater weight is placed on the most recent data, with the weights of all data falling off exponentially as the data age.
- Answer (C) is **incorrect**. Queuing is used to minimize the cost of waiting lines.
- Answer (D) is **incorrect**. PERT is used to monitor the progress of large multi-step projects, such as construction of a building.

[2] Gleim #: 5.6.102 -- Source: CMA 1293 4-25

The four components of time series data are secular trend, cyclical variation, seasonality, and random variation. The seasonality in the data can be removed by

- A. Multiplying the data by a seasonality factor.
- B. Ignoring it.
- C. Taking the weighted average over four time periods.
- D. Subtracting a seasonality factor from the data.

- Answer (A) is **incorrect**. Adding a seasonality factor to, or subtracting it from, a forecast based on trend analysis is a means of adjusting for seasonality.
- Answer (B) is **incorrect**. Seasonality factors cannot be ignored; they are reflected in the data and must be considered for a model to be accurate.

- Answer (C) is **correct**. Time series analysis relies on past experience. Changes in the value of a variable may have several possible components including secular trends, cyclical variation, seasonality, and random variation. Seasonal variations are common in many businesses. A variety of methods exist for including seasonal variations in a forecasting model, but most methods use a seasonal index. Alternatively, seasonal variations can be removed from data by using a weighted average of several time periods instead of data from individual periods.
- Answer (D) is **incorrect**. The seasonality adjustment for a single season's data may be an increase or a decrease.

**[3] Gleim #: 5.6.103 -- Source: CMA 0205**

A forecasting technique that is a combination of the last forecast and the last observed value is called

- A. Delphi.
- B. Least squares.
- C. Regression.
- D. Exponential smoothing.

- Answer (A) is **incorrect**. Delphi is a decision-making approach in which the manager solicits opinions on a problem from experts in the field, summarizes the opinions, and feeds the summaries back to the experts; the process is then reiterated. This method is an attempt to avoid groupthink.
- Answer (B) is **incorrect**. Least squares is the process of using calculus to match a set of data to a straight line; it is used in regression analysis.
- Answer (C) is **incorrect**. Regression analysis is the process of deriving the linear equation that describes the relationship between two variables.
- Answer (D) is **correct**. Exponential smoothing is a widespread technique for making projections because it requires less data be kept on hand than the moving average methods. The technique involves weighting the actual result for the previous period by a smoothing factor, weighting the forecast for the previous period by the smoothing factor's complement, and combining the two.

**[4] Gleim #: 5.6.104 -- Source: CIA 594 II-38**

As part of a risk analysis, an auditor wishes to forecast the percentage growth in next month's sales for a particular plant using the past 30 months' sales results. Significant changes in the organization affecting sales volumes were made within the last 9 months. The most effective analysis technique to use would be

- A. Unweighted moving average.
- B. Exponential smoothing.
- C. Queuing theory.
- D. Linear regression analysis.

- Answer (A) is **incorrect**. An unweighted average will not give more importance to more recent data.
- Answer (B) is **correct**. Under exponential smoothing, each forecast equals the sum of the last observation times the smoothing constant, plus the last forecast times one minus the constant. Thus, exponential means that greater weight is placed on the most recent data, with the weights of all data falling off exponentially as the data age. This feature is important because of the organizational changes that affected sales volume.
- Answer (C) is **incorrect**. Queuing theory is used to minimize the cost of waiting lines.
- Answer (D) is **incorrect**. Linear regression analysis determines the equation for the relationship among variables. It does not give more importance to more recent data.

**[8] Gleim #: 5.6.108 -- Source: CMA 0408 1-152**

Sales of big-screen televisions have grown steadily during the past 5 years. A dealer predicted that the demand for February would be 148 televisions. Actual demand in February was 158 televisions. If the smoothing constant ( ) is 0.3, the demand forecast for March, using the exponential smoothing model, will be

- A. 148 televisions.
- B. 151 televisions.
- C. 155 televisions.
- D. 158 televisions.

- Answer (A) is **incorrect**. Exponential smoothing involves more than simply using one month's forecast as the forecast for the following month.



- Answer (B) is **correct**. Exponential smoothing is a widespread technique for making projections because it requires less data be kept on hand than the moving average methods. Mathematically, a forecast is arrived at with exponential smoothing according to the following formula:

$$\begin{aligned}\text{Forecast} &= (\text{Smoothing factor} \times \text{Previous month result}) + \\ &\quad (\text{Smoothing factor complement} \times \text{Previous month forecast}) \\ &= (0.3 \times 158) + (0.7 \times 148) \\ &= 47.4 + 103.6 \\ &= 151\end{aligned}$$

- Answer (C) is **incorrect**. This number results from reversing the smoothing factor and smoothing factor complement.
- Answer (D) is **incorrect**. Exponential smoothing involves more than simply using one month's actual demand as the forecast for the following month.

[1] Gleim #: 5.7.109 -- Source: CMA 697 4-22

Philip Enterprises, distributor of video discs, is developing its budgeted cost of goods sold for next year. Philip has developed the following range of sales estimates and associated probabilities for the year:

<u>Sales Estimate</u>	<u>Probability</u>
\$ 60,000	25%
85,000	40
100,000	35

Philip's cost of goods sold averages 80% of sales. What is the expected value of Philip's budgeted cost of goods sold?

- A. \$85,000
- B. \$84,000
- C. \$68,000
- D. \$67,200

- Answer (A) is **incorrect**. The amount of \$85,000 is the sales estimate with the highest probability.
- Answer (B) is **incorrect**. The amount of \$84,000 is the expected value of sales.
- Answer (C) is **incorrect**. The amount of \$68,000 is 80% of the sales estimate with the highest probability.
- Answer (D) is **correct**. The expected value is calculated by weighting each sales estimate by the probability of its occurrence. Consequently, the expected value of sales is \$84,000 [ $\$60,000 \times .25$ ] + [ $\$85,000 \times .40$ ] + [ $\$100,000 \times .35$ ]. Cost of goods sold is therefore \$67,200 ( $\$84,000 \times .80$ ).

**[2] Gleim #: 5.7.110 -- Source: CMA 1293 4-26**

The expected value of perfect information is the

- A. Same as the expected profit under certainty.
  - B. Sum of the conditional profit (loss) for the best event of each act times the probability of each event occurring.
  - C. Difference between the expected profit under certainty and the expected opportunity loss.
  - D. Difference between the expected profit under certainty and the expected monetary value of the best act under uncertainty.
- Answer (A) is **incorrect**. The expected value of perfect information is the difference between the expected profit under certainty and the profit from the best decision under uncertainty.
  - Answer (B) is **incorrect**. The expected value of perfect information is the excess of the total conditional profits under certainty over the profit from the best decision under uncertainty.
  - Answer (C) is **incorrect**. There is no expected opportunity loss under conditions of certainty.
  - Answer (D) is **correct**. Perfect information permits certainty that a future state of nature will occur. The expected value of perfect information determines the maximum amount a decision maker is willing to pay for information. It is the difference between the expected value without perfect information, that is, the expected value of the best action under uncertainty and the expected value under certainty. Under certainty, a decision maker knows in each case which state of nature will occur and can act accordingly.

**[5] Gleim #: 5.7.113 -- Source: CMA 690 5-25**

In decision making under conditions of uncertainty, expected value refers to the

- A. Likely outcome of a proposed action.
  - B. Present value of alternative actions.
  - C. Probability of a given outcome from a proposed action.
  - D. Weighted average of probable outcomes of an action.
- Answer (A) is **incorrect**. The expected value is a long-range average; it is likely that the expected value will never be exactly achieved for a particular event.
  - Answer (B) is **incorrect**. Expected value does not consider present values.
  - Answer (C) is **incorrect**. Probability is only one component of expected value.

- Answer (D) is **correct**. The expected value of an action is found by multiplying the probability of each possible outcome by its payoff and summing the products. It represents the long-term average payoff for repeated trials. In other words, expected value is the weighted average of probable outcomes.

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**[Fact Pattern #1]**

A beverage stand can sell either soft drinks or coffee on any given day. If the stand sells soft drinks and the weather is hot, it will make \$2,500; if the weather is cold, the profit will be \$1,000. If the stand sells coffee and the weather is hot, it will make \$1,900; if the weather is cold, the profit will be \$2,000. The probability of cold weather on a given day at this time is 60%.

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**[6] Gleim #: 5.7.114 -- Source: CMA 1292 4-21**

(Refers to Fact Pattern #1)

The expected payoff for selling coffee is

- A. \$1,360
- B. \$2,200
- C. \$3,900
- D. \$1,960

- Answer (A) is **incorrect**. The least the company can make by selling coffee is \$1,900.
- Answer (B) is **incorrect**. The most the company can make by selling coffee is \$2,000.
- Answer (C) is **incorrect**. The most the company can make by selling coffee is \$2,000.
- Answer (D) is **correct**. The expected payoff calculation for coffee is

$$\begin{aligned}\text{Expected payoff} &= \text{Prob. hot (Payoff hot)} + \text{Prob. cold (Payoff cold)} \\ &= .4(\$1,900) + .6(\$2,000) \\ &= \$1,960\end{aligned}$$

[7] Gleim #: 5.7.115 -- Source: CMA 1292 4-22

(Refers to Fact Pattern #1)

The expected payoff if the vendor has perfect information is

- A. \$3,900
- B. \$2,200
- C. \$1,360
- D. \$1,960

- Answer (A) is **incorrect**. The most the vendor can make is \$2,500 per day.
- Answer (B) is **correct**. The vendor would like to sell coffee on cold days (\$2,000) and soft drinks on hot days (\$2,500). Hot days are expected 40% of the time. Hence, the probability is 40% of making \$2,500 by selling soft drinks. The chance of making \$2,000 by selling coffee is 60%. The payoff equation is:

$$\begin{aligned}\text{Exp. payoff with perf. info.} &= \text{Prob. hot (Payoff soft drinks)} + \\ &\quad \text{Prob. cold (Payoff coffee)} \\ &= .4(\$2,500) + .6(\$2,000) \\ &= \$2,200\end{aligned}$$

- Answer (C) is **incorrect**. The least the vendor could make by having perfect information is \$2,000 on cold days.
- Answer (D) is **incorrect**. The least the vendor could make by having perfect information is \$2,000 on cold days.

[8] Gleim #: 5.7.116 -- Source: CMA 1292 4-23

(Refers to Fact Pattern #1)

If the probability of hot weather, given a hot weather forecast, is 50%, how much would the vendor be willing to pay for the forecast?

- A. \$600
- B. \$300
- C. \$1,000
- D. \$500

- Answer (A) is **incorrect**. The vendor would pay \$600 for perfect information, but the forecasts are only 50% accurate.

- Answer (B) is **correct**. If the weather is hot and coffee is served, the vendor earns \$1,900. If the vendor knows the weather will be hot, (s)he would sell soft drinks and make \$2,500, a \$600 increase. Thus, the vendor should be willing to pay up to \$600 for perfect information regarding hot weather. However, if the forecasts are only 50% accurate, the information is not perfect. Accordingly, the vendor should be willing to pay only \$300 (the \$600 potential increase in profits  $\times$  50%) for the sometimes accurate forecasts.
- Answer (C) is **incorrect**. The most the vendor could profit from perfect information on hot days would be \$600 (\$2,500 – \$1,900).
- Answer (D) is **incorrect**. Perfect information is worth \$600, but information that is 50% accurate warrants only a \$300 payment.

**[Fact Pattern #2]**

Butler and Burnside are projecting market conditions for the upcoming month. They have prepared the following payoff table:

Supply in Units	Demand in Units			
	0	2	4	6
	Probability of Demand			
	0.1	0.3	0.4	0.2
0	\$ 0	\$ 0	\$ 0	\$ 0
2	(80)	40	40	40
4	(160)	(40)	80	80
6	(240)	(120)	0	120

**[9] Gleim #: 5.7.117 -- Source: CMA 689 5-28**

(Refers to Fact Pattern #2)

Butler and Burnside's expected profit when supply equals 4 units is

- A. \$(40)
- B. \$80
- C. \$20
- D. \$120

- Answer (A) is **incorrect**. This figure is the payoff amount when demand is 2 units.
- Answer (B) is **incorrect**. This figure is the payoff amount when demand is 4 or 6 units.

- Answer (C) is **correct**. The approach to the solution is to weight (multiply) the probabilities for each level of demand by the payoff for that level of demand.

<u>Demand</u>	<u>Payoff</u>		<u>Probability</u>		<u>Weighted Payoffs</u>
0	\$(160)	×	.1	=	\$(16)
2	(40)	×	.3	=	(12)
4	80	×	.4	=	32
6	80	×	.2	=	<u>16</u>
Expected Profit					<u><u>\$ 20</u></u>

- Answer (D) is **incorrect**. This figure is calculated by adding the amounts in the column for a demand of 4 units.

**[10] Gleim #: 5.7.118 -- Source: CMA 689 5-29**

(Refers to Fact Pattern #2)

Butler and Burnside's expected profit with perfect information is

- A. \$28
- B. \$20
- C. \$(36)
- D. \$68

- Answer (A) is **incorrect**. With perfect information, the seller could order the inventory each day to meet the exact demand. The total profit can be calculated by weighting the payoff from each best option.
- Answer (B) is **incorrect**. With perfect information, the seller could order the inventory each day to meet the exact demand. The total profit can be calculated by weighting the payoff from each best option.
- Answer (C) is **incorrect**. With perfect information, the seller could order the inventory each day to meet the exact demand. The total profit can be calculated by weighting the payoff from each best option.



- Answer (D) is **correct**. With perfect information, the seller could order the inventory each day to meet the exact demand. For example, if demand were zero, supply would be zero and the seller would not lose any money. If demand were 2 units, the seller would acquire an equal supply and make a profit of \$40. The total profit can be calculated by weighting the payoff from each best option.

<u>Demand</u>	<u>Payoff</u>		<u>Probability</u>		<u>Weighted Payoffs</u>
0	\$ 0	×	.1	=	\$ 0
2	40	×	.3	=	12
4	80	×	.4	=	32
6	120	×	.2	=	<u>24</u>
Expected Profit					<u><u>\$68</u></u>

**[11] Gleim #: 5.7.119 -- Source: CMA 689 5-30**

(Refers to Fact Pattern #2)

The price Butler and Burnside are willing to pay for perfect information is

- A. \$68
- B. \$40
- C. \$48
- D. \$104

- Answer (A) is **incorrect**. This figure is the amount of profit with perfect information.

- Answer (B) is **correct**. The maximum amount the seller should pay for perfect information is the difference between the expected profit with perfect information and the expected profit if demand is not known. With perfect information, supply is the correct amount of units to maximize profit at each level of demand. Thus, the expected profit with perfect information is computed as follows:  $(.1 \times \$0) + (.3 \times \$40) + (.4 \times \$80) + (.2 \times \$120) = \$68$ . Without perfect information, the seller should purchase the supply that will result in the maximum long-run profit. Using the information given, it can be determined that the profit will be \$20 when the supply is 4 units. It is also evident that the profit is zero when the supply is zero. The expected profit must also be calculated for supply levels of 2 and 6 units. For a supply of 2 units, the expected profit is

$$.1(-\$80) + .3(\$40) + .4(\$40) + .2(\$40) = \$28$$

For a supply of 6 units, the expected loss is

$$.1(-\$240) + .3(-\$120) + .4(\$0) + .2(\$120) = \$(36)$$

Thus, without perfect information, profits are maximized at \$28 when the supply is 2 units. However, with perfect information, profits will be \$68. Thus, a rational seller should therefore be willing to pay up to \$40 (\$68 – \$28).

- Answer (C) is **incorrect**. The price paid for perfect information equals the difference between profits expected with perfect information and profits without perfect information.
- Answer (D) is **incorrect**. The price paid for perfect information equals the difference between profits expected with perfect information and profits without perfect information.

**[Fact Pattern #3]**

The College Honor Society sells hot pretzels at the home football games. The pretzels are sold for \$1.00 each, and the cost per pretzel is \$.30. Any unsold pretzels are discarded because they will be stale before the next home game.

The frequency distribution of the demand for pretzels per game is presented as follows:

<u>Unit Sales Volume</u>	<u>Probability</u>
2,000 pretzels	.10
3,000 pretzels	.15
4,000 pretzels	.20
5,000 pretzels	.35
6,000 pretzels	.20

**[15] Gleim #: 5.7.123 -- Source: CMA 1289 5-20**

(Refers to Fact Pattern #3)

The estimated demand for pretzels at the next home football game using an expected value approach is

- A. 4,000 pretzels.
- B. 4,400 pretzels.
- C. 5,000 pretzels.
- D. Some amount other than those given.

- Answer (A) is **incorrect**. The figure of 4,000 pretzels assumes each outcome is equally likely.
- Answer (B) is **correct**. The calculation using an expected value approach weights each possible sales volume by its probability. Thus, the estimated demand is 4,400 pretzels.

<u>Volume</u>		<u>Probability</u>		<u>Result</u>
2,000	×	.10	=	200
3,000	×	.15	=	450
4,000	×	.20	=	800
5,000	×	.35	=	1,750
6,000	×	.20	=	1,200
Expected value				<u><u>4,400</u></u>

- Answer (C) is **incorrect**. The estimated demand using a deterministic approach based on the most likely outcome is 5,000 pretzels.
- Answer (D) is **incorrect**. The figure of 4,400 pretzels is among the responses given.

**[16] Gleim #: 5.7.124 -- Source: CMA 1289 5-21**

(Refers to Fact Pattern #3)

The estimated demand for pretzels at the next home football game using a deterministic approach based on the most likely outcome is

- A. 4,000 pretzels.
- B. 4,400 pretzels.
- C. 5,000 pretzels.
- D. 6,000 pretzels.

- Answer (A) is **incorrect**. The figure of 4,000 pretzels assumes each outcome is equally likely.
- Answer (B) is **incorrect**. The estimated demand using an expected value approach is 4,400 pretzels.
- Answer (C) is **correct**. A deterministic approach assumes that a value is known with certainty. If that value is deemed to be the most likely outcome, assumed demand will be 5,000 pretzels, the volume with the highest probability (35%).
- Answer (D) is **incorrect**. The figure of 6,000 pretzels is merely the greatest demand.

**[17] Gleim #: 5.7.125 -- Source: CMA 1289 5-22**

(Refers to Fact Pattern #3)

The conditional profit per game of having 4,000 pretzels available but only selling 3,000 pretzels is

- A. \$1,800
- B. \$2,100
- C. \$2,800
- D. Some amount other than those given.

- Answer (A) is **correct**. Each pretzel costs \$.30. Thus, the cost of 4,000 pretzels is \$1,200 ( $4,000 \times \$.30$ ). Selling 3,000 pretzels at \$1 each produces revenue of \$3,000. Subtracting the \$1,200 of costs from the \$3,000 of revenue results in a conditional profit of \$1,800.

- Answer (B) is **incorrect**. The amount of \$2,100 assumes 3,000 are available and 3,000 are sold.
- Answer (C) is **incorrect**. The conditional profit given that 4,800 are sold is \$2,800.
- Answer (D) is **incorrect**. The amount of \$1,800 is among the responses given.

**[18] Gleim #: 5.7.126 -- Source: CMA 1289 5-23**

(Refers to Fact Pattern #3)

The conditional profit per game of having 4,000 pretzels available and selling all 4,000 pretzels is

- A. \$1,200
- B. \$2,100
- C. \$2,800
- D. \$800

- Answer (A) is **incorrect**. The cost of 4,000 pretzels is \$1,200.
- Answer (B) is **incorrect**. The amount of \$2,100 assumes 3,000 are available and 3,000 are sold.
- Answer (C) is **correct**. Each pretzel costs \$.30. Thus, the cost of 4,000 pretzels is \$1,200 ( $4,000 \times \$.30$ ). Selling 4,000 pretzels at \$1 each produces revenue of \$4,000. Subtracting the \$1,200 of costs from the \$4,000 of revenue results in a conditional profit of \$2,800.
- Answer (D) is **incorrect**. The amount of \$800 assumes 2,000 are sold.

**[19] Gleim #: 5.7.127 -- Source: CMA 690 5-19**

Alsen Company is in the process of preparing its budget. As part of the process, the company has prepared sales estimates and estimated the probability associated with each sales estimate. Which one of the following techniques should be used by Alsen to determine sales for budgeting purposes?

- A. Linear programming.
- B. Minimax regret criteria.
- C. Expected value analysis.
- D. Monte Carlo simulation.

- Answer (A) is **incorrect**. Linear programming is used to optimize a function, such as profits or costs, given certain constraints.

- Answer (B) is **incorrect**. The minimax regret criterion is a decision rule developed in game theory. It chooses the option with the set of outcomes that includes the lowest maximum opportunity cost.
- Answer (C) is **correct**. The expected value of an action is found by multiplying the probability of each possible outcome by its payoff and summing the products. It represents the long-term average payoff for repeated trials. If estimates of sales and probabilities are known, expected value analysis can be used to determine budgeted sales.
- Answer (D) is **incorrect**. Monte Carlo simulation involves adding random numbers to otherwise deterministic models to simulate the uncertainty inherent in real-world situations.

**[20] Gleim #: 5.7.128 -- Source: CMA 692 4-4**

The expected monetary value of an event

- A. Is equal to the conditional value or profit of the event.
  - B. Is equal to the payoff of the event times the probability the event will occur.
  - C. Is the profit forgone by not choosing the best alternative.
  - D. Is the absolute profit from a particular event.
- Answer (A) is **incorrect**. The conditional value is the return given a certain condition or state of nature.
  - Answer (B) is **correct**. For decisions involving risk, the concept of expected value provides a rational means for selecting the best alternative. The expected value of a decision is found by multiplying the probability of each outcome by its payoff, and summing the products. The result is the long-term average payoff for repeated trials.
  - Answer (C) is **incorrect**. The profit forgone by not choosing the best alternative is the opportunity cost.
  - Answer (D) is **incorrect**. Expected value represents the long-run average profit from an event.

**[21] Gleim #: 5.7.129 -- Source: CMA 1286 5-3**

Expected value in decision analysis is

- A. A standard deviation using the probabilities as weights.
- B. An arithmetic mean using the probabilities as weights.
- C. The square root of the squared deviations.
- D. A measure of the difference between the best possible outcome and the outcome of the original decision.

- Answer (A) is **incorrect**. The standard deviation is a measure of dispersion of a population.
- Answer (B) is **correct**. Expected value analysis is an estimate of future monetary value based on forecasts and their related probabilities of occurrence. The expected value is found by multiplying the probability of each outcome by its payoff and summing the products. Expected value is thus an arithmetic mean using probabilities as weights.
- Answer (C) is **incorrect**. This is a nonsense answer.
- Answer (D) is **incorrect**. Expected value is a prospective measure.

**[22] Gleim #: 5.7.130 -- Source: CMA 688 5-20**

The following table contains the profit outcomes for each state of nature and decision combination for a firm:

	States of Nature		
	S1	S2	S3
Decision 1	\$ 24	\$14	\$ (6)
Decision 2	\$ 20	\$10	\$ 5
Decision 3	\$(20)	\$ 8	\$15
Probabilities	0.10	0.50	0.40

The expected value of perfect information for this firm in this case is

- A. \$6.40
- B. \$8.40
- C. \$9.00
- D. \$8.60



- Answer (A) is **correct**. The first step is to determine the expected value without perfect information by formulating a payoff matrix. For example, the expected payoff for the combination of State of Nature S1 and Decision 1 is \$2.40 (10% probability  $\times$  \$24 outcome). The entire payoff matrix is

	<u>S1</u>	<u>S2</u>	<u>S3</u>	<u>Total</u>
Decision 1	\$ 2.40	\$7.00	\$(2.40)	\$7.00
Decision 2	2.00	5.00	2.00	9.00
Decision 3	(2.00)	4.00	6.00	8.00

Thus, the best decision under conditions of uncertainty is Decision 2 (expected value = \$9). If the decision maker knew exactly when each state of nature would occur, the decision would correspond to the maximum profit opportunity for that state of nature. For instance, if S1 is certain, the most profitable decision is Decision 1 (\$24). Thus, the expected payoff given perfect information is \$15.40.

<u>State of Nature</u>	<u>Profit</u>	<u>Probability</u>	<u>Payoff</u>
1	\$24	10%	\$2.40
2	14	50	7.00
3	15	40	6.00

The expected value of perfect information is therefore \$6.40 (\$15.40 – \$9.00).

- Answer (B) is **incorrect**. The payoffs from Decisions 1 and 3 equal \$8.40 (\$2.40 + \$6.00).
- Answer (C) is **incorrect**. The best decision under conditions of uncertainty is \$9.00.
- Answer (D) is **incorrect**. The expected value of perfect information is the difference between the expected payoff with perfect information and the expected payoff without perfect information.

**[23] Gleim #: 5.7.131 -- Source: CMA 691 4-1**

The expected monetary value of an act is the

- Sum of the conditional profit (loss) for each event.
  - Sum of the conditional profit (loss) for each event times the probability of each event's occurrence.
  - Conditional profit (loss) for the best event times the probability of each event's occurrence.
  - Revenue minus the costs for the act.
- Answer (A) is **incorrect**. The conditional profit or loss must be weighted by the probability of each event's occurrence.

- Answer (B) is **correct**. Expected value analysis estimates future monetary value based on forecasts and their related probabilities of occurrence. The expected value under uncertainty is found by multiplying the probability of each outcome (event) by its payoff (conditional profit or loss) and summing the products.
- Answer (C) is **incorrect**. The best event will not occur every time; less desirable events will also occur and must enter into the calculation.
- Answer (D) is **incorrect**. Each event must be weighted by the probability of its occurrence.

**[24] Gleim #: 5.7.132 -- Source: CMA 691 4-3**

The expected value of perfect information is the

- A. Same as the expected profit under certainty.
  - B. Sum of the conditional profit (loss) for the best event of each act times the probability of each event's occurring.
  - C. Difference between the expected profit under uncertainty and conditional profit for the best act under certainty.
  - D. Difference between the expected profit under certainty and the expected monetary value of the best act under uncertainty.
- 
- Answer (A) is **incorrect**. The value of perfect information is limited to the excess of the profit under certainty over the best return without perfect information.
  - Answer (B) is **incorrect**. The value of perfect information is limited to the excess of the profit under certainty over the best return without perfect information.
  - Answer (C) is **incorrect**. It may not be the best act under certainty that is considered; the value of perfect information is based on the event that is known will happen, whether that event is the best or the worst.
  - Answer (D) is **correct**. The expected value under uncertainty is found by multiplying the probability of each outcome (event) by its payoff (conditional profit or loss) and summing the products. Perfect information is the knowledge that a future state of nature will occur with certainty. The expected value of perfect information is the difference between the expected value under certainty and the expected value of the optimal decision under uncertainty. The expected value under certainty equals the sum of the products of the profit maximizing payoffs of perfect forecasts and the related probabilities.

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**[Fact Pattern #4]**

The Booster Club at Blair College sells hot dogs at home basketball games. The group has a frequency distribution of the demand for hot dogs per game and plans to apply the expected value decision rule to determine the number of hot dogs to stock.

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**[26] Gleim #: 5.7.134 -- Source: CMA 691 4-2**

(Refers to Fact Pattern #4)

The Booster Club should select the demand level that

- A. Is closest to the expected demand.
- B. Has the greatest probability of occurring.
- C. Has the greatest expected opportunity cost.
- D. Has the greatest expected monetary value.

- Answer (A) is **incorrect**. Stocking an amount equal to expected demand (the sum of the products of the possible amounts demanded and their respective probabilities) does not necessarily maximize expected profits.
- Answer (B) is **incorrect**. The number of bags to stock is not necessarily the same as the amount demanded with the highest probability. The inventory decision should be based on the relation of the probability distribution to the monetary outcomes.
- Answer (C) is **incorrect**. The greatest opportunity cost is not factored into the expected value analysis.
- Answer (D) is **correct**. The Booster Club should select the demand level that maximizes profits, that is, the level with the greatest expected monetary value. This level may not include the event with the highest conditional profit because this profit may be accompanied by a low probability of occurrence. Alternatively, the event with the highest probability of occurrence may not be selected because it does not offer a high conditional profit.

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**[Fact Pattern #5]**

A company is considering three alternative machines to produce a new product. The cost structures (unit variable costs plus avoidable fixed costs) for the three machines are shown as follows. The selling price is unaffected by the machine used.

Single purpose machine	$$.60x + \$20,000$
Semiautomatic machine	$$.40x + \$50,000$
Automatic machine	$$.20x + \$120,000$

The demand for units of the new product is described by the following probability distribution.

<u>Demand</u>	<u>Probability</u>
200,000	0.4
300,000	0.3
400,000	0.2
500,000	0.1

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**[27] Gleim #: 5.7.135 -- Source: CMA 689 5-26**

(Refers to Fact Pattern #5)

Ignoring the time value of money, the expected cost of using the semiautomatic machine is

- A. \$170,000
- B. \$130,000
- C. \$210,000
- D. \$250,000

- Answer (A) is **correct**. The expected demand is 300,000 units  $[(.4 \times 200,000) + (.3 \times 300,000) + (.2 \times 400,000) + (.1 \times 500,000)]$ . Total expected cost is therefore \$170,000 [\$50,000 fixed cost +  $(.40 \times 300,000)$  variable cost].
- Answer (B) is **incorrect**. The amount of \$130,000 is calculated by using demand of 200,000 units.
- Answer (C) is **incorrect**. The amount of \$210,000 is calculated by using demand of 400,000 units.
- Answer (D) is **incorrect**. The amount of \$250,000 is calculated by using demand of 500,000 units.

**[28] Gleim #: 5.7.136 -- Source: CMA 689 5-27**

(Refers to Fact Pattern #5)

Using the expected value criterion,

- A. The single purpose machine should be used because of the low expected demand.
  - B. The automatic machine should be used because of the high expected demand.
  - C. The semiautomatic machine should be used because it has the lowest expected cost.
  - D. The automatic machine has the lowest expected cost.
- Answer (A) is **incorrect**. The single purpose machine is not the best choice based on the expected demand level.
  - Answer (B) is **incorrect**. The automatic machine is not the best choice based on the expected demand level.
  - Answer (C) is **correct**. The semiautomatic machine has an expected cost of \$170,000 based on an expected demand of 300,000 units  $[(.4 \times 200,000) + (.3 \times 300,000) + (.2 \times 400,000) + (.1 \times 500,000)]$ . The single purpose machine has an expected cost of \$200,000  $[(.60 \times 300,000) + \$20,000]$ . The automatic machine has an expected cost of \$180,000  $[(.20 \times 300,000) + \$120,000]$ . Hence, the semiautomatic machine has the lowest expected cost at the expected level of demand.
  - Answer (D) is **incorrect**. The automatic machine has the second lowest expected cost.

**[Fact Pattern #6]**

Stan Berry is considering selling peanuts at the Keefer High School football games. The peanuts would cost \$.50 per bag and could be sold for \$1.50 per bag. No other costs would be incurred to sell the peanuts. All unsold bags can be returned to the supplier for \$.30 each. Berry estimated the demand for peanuts at each football game and constructed the payoff table that follows.

Demand (Bags)	Probability of Demand	Action (Bags to Stock)			
		20	30	40	50
20	.2	\$20	\$18	\$16	\$14
30	.4	\$20	\$30	\$28	\$26
40	.3	\$20	\$30	\$40	\$38
50	.1	\$20	\$30	\$40	\$50

**[29] Gleim #: 5.7.137 -- Source: CMA 690 5-17**

(Refers to Fact Pattern #6)

The optimum number of bags of peanuts for Stan Berry to stock is

- A. 20
- B. 30
- C. 40
- D. 50

- Answer (A) is **incorrect**. The figure of 20 units does not have the greatest expected value.
- Answer (B) is **incorrect**. The figure of 30 units does not have the greatest expected value.
- Answer (C) is **correct**. Expected value analysis is a means of selecting the best option when decisions involve risk. The expected value equals the sum of the products of the various payoffs and their respective probabilities. Stan Berry can calculate the expected value of each of his four possible actions as follows:

Bags Stocked		Expected Value
20	$.2(\$20) + .4(\$20) + .3(\$20) + .1(\$20)$	= \$20.00
30	$.2(\$18) + .4(\$30) + .3(\$30) + .1(\$30)$	= 27.60
40	$.2(\$16) + .4(\$28) + .3(\$40) + .1(\$40)$	= 30.40
50	$.2(\$14) + .4(\$26) + .3(\$38) + .1(\$50)$	= 29.60

The action with the highest expected payoff is to stock 40 bags.

- Answer (D) is **incorrect**. The figure of 50 units does not have the greatest expected value.

**[30] Gleim #: 5.7.138 -- Source: CMA 690 5-18**

(Refers to Fact Pattern #6)

The maximum that Stan Berry should pay for perfect information so that he could always stock the correct number of bags of peanuts is

- A. \$.80
- B. \$2.60
- C. \$10.40
- D. \$30.00

- Answer (A) is **incorrect**. The most Stan would pay for perfect information is the difference between expected profit with perfect information and expected profit without perfect information.
- Answer (B) is **correct**. Expected value analysis estimates future monetary value based on forecasts and their related probabilities of occurrence. The expected value is found by multiplying the probability of each outcome by its payoff and summing the products. The expected value of perfect information is the difference between the expected value under certainty and the expected value of the optimal decision under uncertainty. The expected value under certainty equals the sum of the products of the profit maximizing payoffs of perfect forecasts and the related probabilities.

20% × \$20 =	\$ 4.00
40% × \$30 =	12.00
30% × \$40 =	12.00
10% × \$50 =	<u>5.00</u>
Expected payoff with perfect info.	<u><u>\$33.00</u></u>

Thus, with perfect information, the proprietor could achieve an average profit of \$33 per game. Without perfect information, the expected value is only \$30.40. Accordingly, up to \$2.60 could be paid for perfect information (\$33 - \$30.40).

- Answer (C) is **incorrect**. The most Stan would pay for perfect information is the difference between expected profit with perfect information and expected profit without perfect information.
- Answer (D) is **incorrect**. The most Stan would pay for perfect information is the difference between expected profit with perfect information and expected profit without perfect information.



**[31] Gleim #: 5.7.139 -- Source: CMA 0205**

Carson Products sell sweatshirts and is preparing for a World Cup Soccer match. The cost per sweatshirt varies with the quantity purchased as follows.

<u>Quantity</u>	<u>Unit Cost</u>
4,000	\$14.00
5,000	13.50
6,000	13.00
7,000	12.50

Carson must purchase the sweatshirts one month before the game and has analyzed the market and estimated sales levels as follows.

Unit sales	4,000	5,000	6,000	7,000
Probability	15%	20%	35%	30%

The estimated selling price is \$25 for sales made before and during game day. Any sweatshirts remaining after game day can be sold at wholesale to a local discount store for \$10.

The expected profit if Carson purchased 6,000 shirts is

- A. \$64,500
- B. \$66,000
- C. \$69,000
- D. \$72,000

- Answer (A) is **correct**. An expected value for each level of demand is derived by weighting the profit for that level by the probability of its occurrence. The cost of goods is the same in every case because 6,000 sweatshirts are being purchased without certain knowledge of what demand will be. Also, the gameday revenue for the 7,000 demand level is the same as for 6,000 since Carson only has 6,000 sweatshirts available for sale.

		Demand Level				Total
		4,000	5,000	6,000	7,000	
Gameday revenue @ \$25 ea.		\$100,000	\$125,000	\$150,000	\$150,000	
Cost of goods (6,000 @ \$13 ea.)		(78,000)	(78,000)	(78,000)	(78,000)	
Remainder revenue	(2,000 @ \$10 ea.)	20,000				
	(1,000 @ \$10 ea.)		10,000			
	(0 @ \$10 ea.)			0	0	
Total profit		\$42,000	\$57,000	\$72,000	\$72,000	
Probability		× 15%	× 20%	× 35%	× 30%	
Expected value		<u>\$6,300</u>	<u>\$11,400</u>	<u>\$25,200</u>	<u>\$21,600</u>	<u>\$64,500</u>

- Answer (B) is **incorrect**. Improperly using a unit cost of \$14.00 for all units and failing to weight the total profits results in \$66,000.
- Answer (C) is **incorrect**. Improperly using a unit cost of \$13.50 for all units and failing to weight the total profits results in \$69,000.
- Answer (D) is **incorrect**. Improperly using 7,000 unit sales at the 7,000 demand level (only 6,000 shirts are available for sale) results in \$72,000.

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**[Fact Pattern #7]**

A computer store sells four computer models designated as P104, X104, A104, and S104. The store manager has made random number assignments to represent customer choices based on past sales data. The assignments are shown below.

<u>Model</u>	<u>Random Numbers</u>
P104	0-1
X104	2-6
A104	7-8
S104	9

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**[32] Gleim #: 5.7.140 -- Source: CMA 688 5-25**

(Refers to Fact Pattern #7)

The probability that a customer will select model P104 is

- A. 10%
  - B. 20%
  - C. 50%
  - D. Some percentage other than those given.
- Answer (A) is **incorrect**. This percentage is the probability of selecting S104.
  - Answer (B) is **correct**. Ten random numbers have been assigned. Of these, two (0 and 1) have been assigned to model P104. Thus, there are two chances out of ten, or 20%, that a customer will select that model.
  - Answer (C) is **incorrect**. The probability of selecting X104 is 50%.
  - Answer (D) is **incorrect**. The correct percentage is among the responses given.

**[33] Gleim #: 5.7.141 -- Source: CMA 688 5-26**

(Refers to Fact Pattern #7)

In running a simulation of the computer demand, the following numbers are drawn in sequence: 2, 8, and 6. The simulation indicates that the third customer will purchase.

- A. Model P104.
- B. Model X104.
- C. Model A104.
- D. Model S104.

- Answer (A) is **incorrect**. Model P104 corresponds to numbers 0 and 1.
- Answer (B) is **correct**. The third customer is simulated by the third number drawn. Therefore, the third customer's purchase is represented by the number 6. The numbers 2 through 6 correspond to model X104. Thus, the third customer is expected to purchase model X104.
- Answer (C) is **incorrect**. Model A104 corresponds to numbers 7 and 8.
- Answer (D) is **incorrect**. Model S104 corresponds to number 9.

**[34] Gleim #: 5.7.142 -- Source: CMA 683 5-8**

A company is simulating the actions of a government agency in which 50% of the time a recall of a product is required, 40% of the time only notification of the buyer about a potential defect is required, and 10% of the time no action on its part is required. Random numbers of 1 to 100 are being used. An appropriate assignment of random numbers for the recall category would be

- A. 1-40
- B. 40-90
- C. 61-100
- D. 11-60

- Answer (A) is **incorrect**. The assignment of 1-40 is an appropriate assignment of random numbers for the notification category.
- Answer (B) is **incorrect**. The assignment of 40-90 includes 51 numbers.
- Answer (C) is **incorrect**. The assignment of 61-100 is an appropriate assignment of random numbers for the notification category.
- Answer (D) is **correct**. Given a 50% chance of a recall, 50 different numbers should be assigned to that alternative. The answer (11-60) is the only alternative with 50 numbers.

[35] Gleim #: 5.7.143 -- Source: CMA 0408 1-176

Johnson Software has developed a new software package. Johnson's sales manager has prepared the following probability distribution describing the relative likelihood of monthly sales levels and relative income (loss) for the company's new software package.

Monthly Sales In Units	Probability	Income(Loss)
10,000	.2	\$(4,000)
20,000	.3	10,000
30,000	.3	30,000
40,000	.2	60,000

If Johnson decides to market its new software package, the expected value of additional monthly income will be

- A. \$23,200
- B. \$24,000
- C. \$24,800
- D. \$25,000

- Answer (A) is **correct**. Expected value is a means of associating a dollar amount with each of the possible outcomes of a probability distribution. The outcome yielding the highest expected value (which may or may not be the most likely one) is the optimal alternative. The expected value of each outcome, and of the project as a whole, can be determined through the preparation of a payoff table, as follows:

Monthly Sales In Units	Probability		Income (Loss)		Expected Value
10,000	.2	×	\$(4,000)	=	\$ (800)
20,000	.3	×	10,000	=	3,000
30,000	.3	×	30,000	=	9,000
40,000	.2	×	60,000	=	12,000
					<u>\$23,200</u>

- Answer (B) is **incorrect**. The amount of \$24,000 results from failing to account for the \$4,000 loss at the 10,000-unit sales level.
- Answer (C) is **incorrect**. The amount of \$24,800 results from improperly treating the \$4,000 from the 10,000-unit level as income rather than as a loss.

- Answer (D) is **incorrect**. The amount of \$25,000 results from improperly weighting the monthly sales units, rather than the income and loss figures, by the probabilities.

**[36] Gleim #: 5.7.144 -- Source: CMA 0408 1-177**

According to recent focus sessions, Norton Corporation has a “can’t miss” consumer product on its hands. Sales forecasts indicate either excellent or good results, with Norton’s sales manager assigning a probability of .6 to a good results outcome. The company is now studying various sales compensation plans for the product and has determined the following contribution margin data:

	<u>Contribution Margin</u>
If sales are excellent and	
Plan 1 is adopted	\$300,000
Plan 2 is adopted	370,000
If sales are good and	
Plan 1 is adopted	240,000
Plan 2 is adopted	180,000

On the basis of this information, which of the following statements is correct?

- A. Plan 2 should be adopted because it is \$10,000 more attractive than Plan 1.
  - B. Plan 1 should be adopted because it is \$8,000 more attractive than Plan 2.
  - C. Plan 1 should be adopted because of the sales manager’s higher confidence in good results.
  - D. Either Plan should be adopted, the decision being dependent on the probability of excellent sales results.
- Answer (A) is **incorrect**. The expected value of Plan 2 exceeds that of Plan 1 by \$10,000 only after merely summing the unweighted contribution margins.

- Answer (B) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

<u>Decision Alternative</u>	<u>State of Nature</u>	<u>Contribution Margin</u>		<u>Probability</u>		<u>Expected Value</u>
Plan 1	Excellent	\$300,000	×	0.4	=	\$120,000
	Good	240,000	×	0.6	=	<u>144,000</u>
						<u><u>\$264,000</u></u>
Plan 2	Excellent	\$370,000	×	0.4	=	\$148,000
	Good	180,000	×	0.6	=	<u>108,000</u>
						<u><u>\$256,000</u></u>

After weighting the possible monetary outcomes by their respective probabilities, the expected value of Plan 1 is \$8,000 higher than the expected value of Plan 2.

- Answer (C) is **incorrect**. The purpose of expected value computation is to take all possible outcomes into account, not just the most likely.
- Answer (D) is **incorrect**. The plan must be adopted before the actual outcome is known.



**[37] Gleim #: 5.7.145 -- Source: CMA 0408 1-178**

Denton, Inc., manufactures industrial machinery and requires 100,000 switches per year in its assembly process. When switches are received from a vendor they are installed in the specific machine and tested. If the switches fail, they are scrapped and the associated labor cost of \$25 is considered lost productivity. Denton purchases “off the shelf” switches as opposed to custom-made switches and experiences quality problems with some vendors’ products. A decision must be made as to which vendor to buy from during the next year based on the following information.

<u>Vendor</u>	<u>Price per Switch</u>	<u>Percentage Expected to Pass the Test</u>
P	\$35	90%
Q	37	94%
R	39	97%
S	40	99%

Which vendor should Denton’s controller recommend to management?

- A. Vendor P.
- B. Vendor Q.
- C. Vendor R.
- D. Vendor S.

- Answer (A) is **incorrect**. The total cost of using Vendor P (\$4,100,000) is greater than that of Vendor S (\$4,065,000)
- Answer (B) is **incorrect**. The total cost of using Vendor Q (\$4,072,000) is greater than that of Vendor S (\$4,065,000).
- Answer (C) is **incorrect**. The total cost of using Vendor R (\$4,092,000) is greater than that of Vendor S (\$4,065,000).

- Answer (D) is **correct**. The total cost of buying from each vendor consists of three components: purchase price, cost of scrapping, and replacement cost. Total purchase price is calculated as follows:

<u>Vendor</u>	<u>Annual Quantity Purchased</u>		<u>Unit Price</u>		<u>Total Purchase Price</u>
P	100,000	×	\$35	=	\$3,500,000
Q	100,000	×	37	=	3,700,000
R	100,000	×	39	=	3,900,000
S	100,000	×	40	=	4,000,000

The number of rejected units is calculated like so:

<u>Vendor</u>	<u>Annual Quantity Purchased</u>		<u>% Unusable</u>		<u>Quantity Unusable</u>
P	100,000	×	10%	=	10,000
Q	100,000	×	6%	=	6,000
R	100,000	×	3%	=	3,000
S	100,000	×	1%	=	1,000

These are used to determine the cost of scrapping and replacing the defective switches:

<u>Vendor</u>	<u>Quantity Unusable</u>		<u>Cost of Scrapping</u>		<u>Total Cost of Scrapping</u>
P	10,000	×	\$25	=	\$250,000
Q	6,000	×	25	=	150,000
R	3,000	×	25	=	75,000
S	1,000	×	25	=	25,000

<u>Vendor</u>	<u>Quantity Unusable</u>		<u>Unit Replacement Cost</u>		<u>Total Replacement Cost</u>
P	10,000	×	\$35	=	\$350,000
Q	6,000	×	37	=	222,000
R	3,000	×	39	=	117,000
S	1,000	×	40	=	40,000

The three costs are combined to arrive at the total cost for each vendor:

[38] Gleim #: 5.7.146 -- Source: CMA 0408 1-179

Scarf Corporation's controller has decided to use a decision model to cope with uncertainty. With a particular proposal, currently under consideration, Scarf has two possible actions, invest or not invest in a joint venture with an international firm. The controller has determined the following:

Action: Invest in the Joint Venture

Events and Probabilities:

Probability of success	= 60%
Cost of investment	= \$9.5 million
Cash flow if investment is successful	= \$15.0 million
Cash flow if investment is unsuccessful	= \$2.0 million
Additional costs to be paid	= \$0
Costs incurred up to this point	= \$650,000

Action: Do Not Invest in the Joint Venture

Events:

Costs incurred up to this point	= \$650,000
Additional costs to be paid	= \$100,000

Which one of the following alternatives correctly reflects the respective expected values of investing versus not investing?

- A. \$300,000 and \$(750,000).
- B. \$(350,000) and \$(100,000).
- C. \$300,000 and \$(100,000).
- D. \$(350,000) and \$(750,000).

- Answer (A) is **incorrect**. The amount of \$(750,000) results from improperly treating sunk costs as relevant when calculating the expected value of not investing.
- Answer (B) is **incorrect**. The amount of \$(350,000) results from improperly treating sunk costs as relevant when calculating the expected value of investing.

- Answer (C) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

Decision Alternative	State of Nature	Cash Inflow	Probability	Expected Value
Invest	Success	\$15,000,000 ×	0.6	= \$ 9,000,000
	No success	2,000,000 ×	0.4	= 800,000
			Cost of investment	(9,500,000)
			Additional costs	<u>0</u>
			Net expected value	<u>\$ 300,000</u>
Do Not Invest	Success	\$ 0 ×	0.6	= \$ 0
	No success	0 ×	0.4	= 0
			Cost of investment	0
			Additional costs	<u>(100,000)</u>
			Net expected value	<u>\$ (100,000)</u>

- Answer (D) is **incorrect**. The amounts of \$(350,000) and \$(750,000) result from improperly treating sunk costs as relevant.

**[39] Gleim #: 5.7.147 -- Source: CMA 0408 1-180**

Allbee Company has three possible investment opportunities. The controller calculated the payoffs and probabilities as follows:

Payoffs	Probabilities		
	Investment A	Investment B	Investment C
\$(20,000)	.3	.2	.3
(10,000)	.1	.2	.1
30,000	.3	.2	.2
70,000	.2	.2	.3
100,000	.1	.2	.1

The cost of investments A, B, and C are the same. Using the expected-value criterion, which one of the following rankings of these investments, from highest payoff to lowest payoff, is correct?

- A. A, B, C.
- B. B, A, C.
- C. C, A, B.
- D. B, C, A.

- Answer (A) is **incorrect**. Investment B has a higher expected value than Investment A.
- Answer (B) is **incorrect**. Investment C has a higher expected value than Investment A.
- Answer (C) is **incorrect**. Investment B has a higher expected value than both Investment C and Investment A.
- Answer (D) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

Investment A			Investment B		
Payoffs	Probability	Expected Value	Payoffs	Probability	Expected Value
\$(20,000)	0.3	\$ (6,000)	\$(20,000)	0.2	\$ (4,000)
(10,000)	0.1	(1,000)	(10,000)	0.2	(2,000)
30,000	0.3	9,000	30,000	0.2	6,000
70,000	0.2	14,000	70,000	0.2	14,000
100,000	0.1	<u>10,000</u>	100,000	0.2	<u>20,000</u>
Total		<u>\$26,000</u>	Total		<u>\$34,000</u>

Investment C		
Payoffs	Probability	Expected Value
\$(20,000)	0.3	\$ (6,000)
(10,000)	0.1	(1,000)
30,000	0.2	6,000
70,000	0.3	21,000
100,000	0.1	<u>10,000</u>
Total		<u>\$30,000</u>

[40] Gleim #: 5.7.148 -- Source: CMA 0408 1-181

The sales manager of Serito Doll Company has suggested that an expanded advertising campaign costing \$40,000 would increase the sales and profits of the company. He has developed the following probability distribution for the effect of the advertising campaign on company sales:

<u>Sales Increase (Units)</u>	<u>Probability</u>
15,000	.10
30,000	.35
45,000	.10
60,000	.25
75,000	.20

The company sells the dolls at \$5.20 each. The cost of each doll is \$3.20. Serito's expected incremental profit, if the advertising campaign is adopted, is

- A. \$6,500
- B. \$46,500
- C. \$53,000
- D. \$93,000

- Answer (A) is **incorrect**. The amount of \$6,500 results from treating the expected unit increases as expected profit amounts.
- Answer (B) is **incorrect**. The amount of \$46,500 results from treating the expected unit increases as expected profit amounts and failing to take the cost of advertising into account.

- Answer (C) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action [Serito's incremental profit on each doll sold is \$2.00 (\$5.20 – \$3.20)]:

Unit Sales Increase		Probability		Expected Unit Increase		Incr. Profit		Expected Profit
15,000	×	0.10	=	1,500	×	\$2	=	\$ 3,000
30,000	×	0.35	=	10,500	×	\$2	=	21,000
45,000	×	0.10	=	4,500	×	\$2	=	9,000
60,000	×	0.25	=	15,000	×	\$2	=	30,000
75,000	×	0.20	=	15,000	×	\$2	=	30,000
Expected gross profit								\$93,000
Cost of advertising								<u>(40,000)</u>
Expected net profit								<u><u>\$53,000</u></u>

- Answer (D) is **incorrect**. The amount of \$93,000 results from failing to take the cost of advertising into account.

**[41] Gleim #: 5.7.149 -- Source: CMA 0408 1-182**

Stock X has the following probability distribution of expected future returns:

Probability	Expected Return
.1	–20%
.2	5%
.4	15%
.2	20%
.1	30%

The expected rate of return on Stock X is

- A. 10%
- B. 12%
- C. 16%
- D. 19%

- Answer (A) is **incorrect**. This percentage results from improperly summing the expected rates of return and dividing by the number of occurrences.



- Answer (B) is **correct**. Expected value computation can be applied to rates of return as well as to dollar amounts.

<u>Probability</u>	<u>Expected Return</u>	<u>Weighted Expected Return</u>
0.1	–20%	–2%
0.2	5%	1%
0.4	15%	6%
0.2	20%	4%
0.1	30%	<u>3%</u>
		<u>12%</u>

- Answer (C) is **incorrect**. This percentage results from failing to treat the –20% return figure as a reduction.
- Answer (D) is **incorrect**. This percentage results from overstating the returns at the higher expected returns.

**[42] Gleim #: 5.7.150 -- Source: CMA 0408 1-183**

Which one of the following four probability distributions provides the highest expected monetary value?

Alternative #1		Alternative #2	
Prob	Cash Inflows	Prob	Cash Inflows
10%	\$ 50,000	10%	\$ 50,000
20%	75,000	20%	75,000
40%	100,000	45%	100,000
30%	150,000	25%	150,000

Alternative #3		Alternative #4	
Prob	Cash Inflows	Prob	Cash Inflows
10%	\$ 50,000	10%	\$150,000
20%	75,000	20%	100,000
40%	100,000	40%	75,000
30%	125,000	30%	50,000

- A. Alternative #1.
- B. Alternative #2.
- C. Alternative #3.
- D. Alternative #4.

- Answer (A) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

Alternative #1			Alternative #2		
Probability	Payoffs	Expected Value	Probability	Payoffs	Expected Value
10%	\$ 50,000	\$ 5,000	10%	\$ 50,000	\$ 5,000
20%	75,000	15,000	20%	75,000	15,000
40%	100,000	40,000	45%	100,000	45,000
30%	150,000	45,000	25%	150,000	37,500
Total		<u>\$105,000</u>	Total		<u>\$102,500</u>

Alternative #3			Alternative #4		
Probability	Payoffs	Expected Value	Probability	Payoffs	Expected Value
10%	\$ 50,000	\$ 5,000	10%	\$150,000	\$15,000
20%	75,000	75,000	20%	100,000	20,000
40%	100,000	40,000	40%	75,000	30,000
30%	125,000	37,500	30%	50,000	15,000
Total		<u>\$97,500</u>	Total		<u>\$80,000</u>

- Answer (B) is **incorrect**. The expected value of Alternative #2 is only \$102,500.
- Answer (C) is **incorrect**. The expected value of Alternative #3 is only \$97,500.
- Answer (D) is **incorrect**. The expected value of Alternative #4 is only \$80,000.

**[43] Gleim #: 5.7.151 -- Source: CMA 1294 4-30**

Sweivel Company is preparing its budget and, taking into consideration the recent pace of economic recovery, has developed several sales forecasts and the estimated probability associated with each sales forecast. To determine the sales forecast to be used for budgeting purposes, which one of the following techniques should Sweivel use?

- Expected value analysis.
- Continuous probability simulation.
- Exponential distribution analysis.
- Sensitivity analysis.

- Answer (A) is **correct**. Expected value analysis provides a rational means for selecting the best alternative in decisions involving risk. The expected value of an alternative is found by multiplying the probability of each outcome by its payoff and summing the products. It represents the long-term average payoff for repeated trials.
- Answer (B) is **incorrect**. Simulation is not necessary. Several estimates are known.
- Answer (C) is **incorrect**. The exponential distribution is the probability of zero occurrences in a specified time period.
- Answer (D) is **incorrect**. Sensitivity analysis involves making several estimates of key variables and recalculating results based on the alternative estimates; the objective is to determine how sensitive a solution is to changes in estimates.

**[Fact Pattern #8]**

Gleason Co. has two products, a frozen dessert and ready-to-bake breakfast rolls, ready for introduction. However, plant capacity is limited, and only one product can be introduced at present. Therefore, Gleason has conducted a market study, at a cost of \$26,000, to determine which product will be more profitable. The results of the study follow.

<u>Sales of Desserts at \$1.80/unit</u>		<u>Sales of Rolls at \$1.20/unit</u>	
<u>Volume</u>	<u>Probability</u>	<u>Volume</u>	<u>Probability</u>
250,000	.30	200,000	.20
300,000	.40	250,000	.50
350,000	.20	300,000	.20
400,000	.10	350,000	.10

The costs associated with the two products have been estimated by Gleason's cost accounting department and are as follows:

	<u>Dessert</u>	<u>Rolls</u>
Ingredients per unit	\$ .40	\$ .25
Direct labor per unit	.35	.30
Variable overhead per unit	.40	.20
Production tooling*	48,000	25,000
Advertising	30,000	20,000

\*Gleason treats production tooling as a current operating expense rather than capitalizing it as a fixed asset.

[44] Gleim #: 5.7.152 -- Source: CMA 687 5-21

(Refers to Fact Pattern #8)

According to Gleason's market study, the expected value of the sales volume of the breakfast rolls is

- A. 125,000 units.
- B. 260,000 units.
- C. 275,000 units.
- D. Some amount other than those given.

- Answer (A) is **incorrect**. This number of units is the 250,000 volume times the probability of 50%.
- Answer (B) is **correct**. The expected value is found by multiplying the probability of each possibility by the potential volumes:

200,000 × .20	=	40,000
250,000 × .50	=	125,000
300,000 × .20	=	60,000
350,000 × .10	=	<u>35,000</u>
Total units		<u><u>260,000</u></u>

- Answer (C) is **incorrect**. This number of units is a simple average of the volume sales of rolls.
- Answer (D) is **incorrect**. The expected value is 260,000 units.

[45] Gleim #: 5.7.153 -- Source: CMA 687 5-22

(Refers to Fact Pattern #8)

Applying a deterministic approach, Gleason's revenue from sales of frozen desserts would be

- A. \$549,000
- B. \$540,000
- C. \$216,000
- D. Some amount other than those given.

- Answer (A) is **incorrect**. Multiplying the volume times the probability times \$1.80 for each possibility and then totaling results in \$549,000. This is the total revenue.

- Answer (B) is **correct**. The word deterministic is used to characterize processes that are not probabilistic. Such an approach uses the most likely value. In this case, sales of desserts would most likely be 300,000 units. At \$1.80 each, total revenue would be \$540,000.
- Answer (C) is **incorrect**. Multiplying 300,000 units times .40 probability times \$1.80 results in \$216,000. The probability should not be used in the formula. It should be used to select the most likely possibility.
- Answer (D) is **incorrect**. The revenue would be \$540,000.

**[46] Gleim #: 5.7.154 -- Source: CMA 687 5-23**

(Refers to Fact Pattern #8)

The expected value of Gleason's operating profit directly traceable to the sale of frozen desserts is

- A. \$198,250
- B. \$150,250
- C. \$120,250
- D. Some amount other than those given.

- Answer (A) is **incorrect**. This amount does not subtract the fixed costs of \$78,000.
- Answer (B) is **incorrect**. This amount does not subtract the advertising costs of \$30,000.
- Answer (C) is **correct**. The expected volume for sales of frozen desserts is 305,000  $[(250,000 \times .30) + (300,000 \times .40) + (350,000 \times .20) + (400,000 \times .10)]$ . At \$1.80 each, the total revenue from 305,000 units would be \$549,000. Variable costs would total \$1.15 each (\$.40 + \$.35 + \$.40), or \$350,750 for 305,000 units. Fixed costs total \$78,000 (\$48,000 + \$30,000). Thus, operating profit would be \$120,250 (\$549,000 – \$350,750 – \$78,000).
- Answer (D) is **incorrect**. The expected value would be \$120,250.

**[1] Gleim #: 5.8.155 -- Source: CMA 689 5-17**

A quantitative technique useful in projecting a firm's sales and profits is

- A. Probability distribution theory.
- B. Gantt charting.
- C. Learning curves.
- D. Queuing theory.

- Answer (A) is **correct**. Probability distribution theory can be used to project sales. It is a mathematical method for making decisions about the likelihood of future events (such as sales) in the face of uncertainty. Various estimates of sales (generated from the sales force) can be weighted with different probabilities.
- Answer (B) is **incorrect**. A Gantt chart is a bar chart used to measure progress toward a goal.
- Answer (C) is **incorrect**. A learning curve measures the benefit of experience in the early stages of a new task.
- Answer (D) is **incorrect**. Queuing (waiting-line) theory is used to determine the optimum balance between the cost of providing service to reduce waiting lines and the cost of allowing waiting lines to exist when items in the queue arrive at random.

**[2] Gleim #: 5.8.156 -- Source: CMA 696 4-20**

A widely used approach that managers use to recognize uncertainty about individual items and to obtain an immediate financial estimate of the consequences of possible prediction errors is

- A. Expected value analysis.
- B. Learning curve analysis.
- C. Sensitivity analysis.
- D. Regression analysis.

- Answer (A) is **incorrect**. Expected value is the probabilistically weighted average of the outcomes of an action.
- Answer (B) is **incorrect**. Learning curve analysis quantifies how labor costs decline as employees learn their jobs through repetition.



- Answer (C) is **correct**. Sensitivity analysis determines how a result varies with changes in a given variable or parameter in a mathematical decision model. For example, in a present value analysis, a manager might first calculate the net present value or internal rate of return assuming that a new asset has a 10-year life. The NPV or IRR can then be recalculated using a 5-year life to determine how sensitive the result is to the change in the assumption.
- Answer (D) is **incorrect**. Regression, or least squares, analysis determines the average change in the dependent variable given a unit change in one or more independent variables.

**[3] Gleim #: 5.8.157 -- Source: CMA 690 5-21**

Through the use of decision models, managers thoroughly analyze many alternatives and decide on the best alternative for the company. Often, the actual results achieved from a particular decision are not what was expected when the decision was made. In addition, an alternative that was not selected would have actually been the best decision for the company. The appropriate technique to analyze the alternatives by using expected inputs and altering them before a decision is made is

- A. Expected value analysis.
- B. Linear programming.
- C. Program Evaluation Review Technique (PERT).
- D. Sensitivity analysis.

- Answer (A) is **incorrect**. Expected value analysis is used to determine an anticipated return or cost based upon probabilities of events and their related outcomes.
- Answer (B) is **incorrect**. Linear programming optimizes a function given certain constraints.
- Answer (C) is **incorrect**. PERT is a network technique used to plan and control large projects.
- Answer (D) is **correct**. Sensitivity modeling can be used to determine the outcome of a variety of decisions. A trial-and-error method may be adopted, usually in a computer model, to calculate the sensitivity of the solution (variability of outcomes) to changes in a variable.

**[4] Gleim #: 5.8.158 -- Source: CMA 1283 5-19**

The process of evaluating the effect of changes in variables such as sales price or wage rates on the optimum solution in a linear programming application is called

- A. Iterative analysis.
- B. Regression analysis.
- C. Sensitivity analysis.
- D. Matrix analysis.

- Answer (A) is **incorrect**. Both the simplex method and iterative analysis are ways of working a linear programming problem by hand.
- Answer (B) is **incorrect**. Regression analysis is a means of finding the relationship between two or more variables.
- Answer (C) is **correct**. Sensitivity analysis is a process to determine how sensitive the final result (solution) is to changes in variables. It is often used in capital budgeting decisions to incorporate various levels of risk.
- Answer (D) is **incorrect**. Matrix analysis is another mathematical tool used to solve a variety of problem types.

**[5] Gleim #: 5.8.159 -- Source: CMA 0408 1-187**

Susan Hines has developed an estimate of the earnings per share for her firm for the next year using the following parameters.

Sales	\$20 million
Cost of goods sold	70% of sales
General & administrative expenses	\$300,000
Selling expense	\$100,000 plus 10% of sales
Debt outstanding	\$5 million @ 8% interest rate
Effective tax rate	35%
Common shares outstanding	2 million

She is now interested in the sensitivity of earnings per share to sales forecast changes. A 10% sales increase would increase earnings per share by

- A. 7.0 cents per share.
- B. 10.4 cents per share.
- C. 13.0 cents per share.
- D. 20.0 cents per share.

- Answer (A) is **incorrect**. The amount of 7.0 cents per share results from assuming an increase in fixed selling costs.
- Answer (B) is **incorrect**. The amount of 10.4 cents per share results from incorrectly assuming an increase in interest expense.
- Answer (C) is **correct**. Sensitivity analysis reveals how sensitive expected value calculations are to the accuracy of the initial estimates. Sensitivity analysis is thus useful in determining whether expending additional resources to obtain better forecasts is justified.

	Original Projection	10% Increase
Sales	\$20,000,000	\$22,000,000
Cost of goods sold	(14,000,000)	(15,400,000)
Gross profit	\$ 6,000,000	\$ 6,600,000
Selling expenses	(2,100,000)	(2,300,000)
G&A expenses	(300,000)	(300,000)
Operating income	\$ 3,600,000	\$ 4,000,000
Interest expense	(400,000)	(400,000)
Earnings before taxes	\$ 3,200,000	\$ 3,600,000
Income taxes	(1,120,000)	(1,260,000)
Net income	<u>\$ 2,080,000</u>	<u>\$ 2,340,000</u>
Earnings per share	\$ 1.04	\$ 1.17

- Answer (D) is **incorrect**. The amount of 20.0 cents per share results from failing to take the variable portion of selling expenses into account or failing to deduct the extra income taxes.



## CMA MCQ Strategic Planning

### [1] Gleim #: 1.1 -- Source: CMA 1291 3-19

A distinction between forecasting and planning

- A. Is not valid because they are synonyms.
- B. Arises because forecasting covers the short term and planning does not.
- C. Is that forecasts are used in planning.
- D. Is that forecasting is a management activity, whereas planning is a technical activity.

Answer (A) is incorrect because forecasting is a basis for planning.

Answer (B) is incorrect because forecasting and planning may be short or long term.

Answer (C) is **correct**. Planning is the determination of what is to be done, and of how, when, where, and by whom it is to be done. Plans serve to direct the activities that all organizational members must undertake to move the organization from where it is to where it wants to be. Forecasting is the basis of planning because it projects the future. A variety of quantitative methods are used in forecasting.

Answer (D) is incorrect because forecasting is often more technical than planning. It can involve a variety of mathematical models.

### [2] Gleim #: 1.2 -- Source: CMA 692 3-12

Strategy is a broad term that usually means the selection of overall objectives. Strategic analysis ordinarily excludes the

- A. Trends that will affect the entity's markets.
- B. Target product mix and production schedule to be maintained during the year.
- C. Forms of organizational structure that would best serve the entity.
- D. Best ways to invest in research, design, production, distribution, marketing, and administrative activities.

Answer (A) is incorrect because strategic analysis includes examining marketing trends.

Answer (B) is **correct**. Strategic analysis is the process of long-range planning. It includes identifying organizational objectives, evaluating the strengths and weaknesses of the organization, assessing risk levels, and forecasting the future direction and influences of factors relevant to the organization, such as market trends, changes in technology, international competition, and social change. The final step is to derive the best strategy for reaching the objectives. Setting the target product mix and production schedule for the current year is not a concern of strategic analysis because it is a short-term activity.

Answer (C) is incorrect because strategic analysis evaluates organizational structure.

Answer (D) is incorrect because strategic analysis includes evaluation of the best ways to invest in research, design, etc.

### [3] Gleim #: 1.3 -- Source: CMA 695 3-13

Strategic planning, as practiced by most modern organizations, includes all of the following except

- A. Top-level management participation.
- B. A long-term focus.
- C. Strategies that will help in achieving long-range goals.
- D. Analysis of the current month's actual variances from budget.

Answer (A) is incorrect because top-level management participation, a long-term focus, strategies that will help in achieving long-range goals, and identification of long-term key variables including external influences are elements of strategic planning.

Answer (B) is incorrect because top-level management participation, a long-term focus, strategies that will help in achieving long-range goals, and identification of long-term key variables including external influences are elements of strategic planning.

Answer (C) is incorrect because top-level management participation, a long-term focus, strategies that will help in achieving long-range goals, and identification of long-term key variables including external influences are elements of strategic planning.

Answer (D) is **correct**. Strategic planning is the process of setting overall organizational objectives and goals. It is a longterm process aimed at charting the future course of the organization. Strategic planning is based on assessing risk levels, evaluating the strengths and weaknesses of the organization, and forecasting the future direction and influences of factors relevant to the organization such as market trends, changes in technology, international competition, and social change. Analysis of the current month's budget variances is not an aspect of strategic planning.



**[4] Gleim #: 1.4 -- Source: CMA 1296 3-11**

Which one of the following reasons is not a significant reason for planning in an organization?

- A. Promoting coordination among operating units.
- B. Forcing managers to consider expected future trends and conditions.
- C. Developing a basis for controlling operations.
- D. Monitoring profitable operations.

Answer (A) is incorrect because planning helps to ensure goal congruence.

Answer (B) is incorrect because, by definition, planning is forward looking. It compels managers to determine their objectives, the methods of achieving those objectives, and the resources required.

Answer (C) is incorrect because plans are the criteria with which results are compared during the planning-control cycle to determine whether objectives are being achieved.

Answer (D) is **correct**. Monitoring profitable operations is not a significant reason for planning. Monitoring is a control function, whereas planning has a control purpose that precedes control in the planning-control cycle. Planning establishes standards against which the control function compares preliminary or final results.

**[5] Gleim #: 1.5 -- Source: CMA 693 3-6**

Certain phases of the planning process should be formalized for all of the following reasons except that

- A. Informal plans and goals lack the necessary precision, understanding, and consistency.
- B. Formal plans can act as a constraint on the decision-making freedom of managers and supervisors.
- C. Formalization requires the establishment and observance of deadlines for decision making and planning.
- D. Formalization provides a logical basis for rational flexibility in planning.

Answer (A) is incorrect because formal planning compels managers to establish specific goals and avoid pursuit of contradictory objectives. It also requires managers to think carefully about what the organization should accomplish and how goals are to be met.

Answer (B) is **correct**. A formal plan is a prescription for organizational behavior and a set of goals. Management decision making is therefore necessarily constrained by the limitations established in the plan.

Answer (C) is incorrect because plans entail commitment to achieving specified results within a given future time frame. Hence, deadlines are an essential part of formal planning.

Answer (D) is incorrect because formal plans should be the product of a disciplined, objective process of gathering evidence and reasoning. It recognizes that assumptions must be made about future conditions and that plans must be flexible enough to allow for changes in those assumptions.

**[6] Gleim #: 1.6 -- Source: CMA 1294 3-14**

All of the following are characteristics of the strategic planning process except the

- A. Emphasis on the long run.
- B. Analysis of external economic factors.
- C. Review of the attributes and behavior of the organization's competition.
- D. Analysis and review of departmental budgets.

Answer (A) is incorrect because emphasis on the long run, analysis of external economic factors, consideration of competitive factors, and analysis of consumer demand are all aspects of strategic planning.

Answer (B) is incorrect because emphasis on the long run, analysis of external economic factors, consideration of competitive factors, and analysis of consumer demand are all aspects of strategic planning.

Answer (C) is incorrect because emphasis on the long run, analysis of external economic factors, consideration of competitive factors, and analysis of consumer demand are all aspects of strategic planning.

Answer (D) is **correct**. Strategic planning is the process of setting the overall organizational objectives and goals, and involves the drafting of strategic plans. Long-range (strategic) planning is based on identifying and specifying organizational goals and objectives, evaluating the strengths and weaknesses of the organization, assessing risk levels, forecasting the future direction and influences of factors relevant to the organization (such as market trends, changes in technology, international competition, and social change), and deriving the best strategy for reaching the objectives given the organization's strengths and weaknesses and the relevant future trends. Analyzing and reviewing departmental budgets is an aspect of operational management and not a part of strategic planning.



**[7] Gleim #: 1.7 -- Source: CMA 696 3-13**

The first step in the sales planning process is to

- A. Assemble all the data that are relevant in developing a comprehensive sales plan.
- B. Develop management guidelines specific to sales planning, including the sales planning process and planning responsibilities.
- C. Prepare a sales forecast consistent with specified forecasting guidelines, including assumptions.
- D. Secure managerial commitment to attain the goals specified in the comprehensive sales plan.

Answer (A) is incorrect because top management must develop guidelines and outline planning responsibilities before assembling data.

Answer (B) is **correct**. Sales planning is a starting point for many other plans. The resources required, revenues to be earned, and costs to be incurred depend on sales. The sales plan of an operating unit should include as much specific information from that unit's management as possible, but it must conform to the strategic plans of corporate management. Thus, top management must provide a context within which operational managers can prepare their plans. Corporate support might include economic forecasts, overall market sales forecasts, and capital budgets.

Answer (C) is incorrect because top management must develop guidelines and outline planning responsibilities before preparing a forecast.

Answer (D) is incorrect because top management must develop guidelines and outline planning responsibilities before securing managerial commitment.

**[31] Gleim #: 1.31 -- Source: CMA 694 3-14**

Which one of the following management considerations is usually addressed first in strategic planning?

- A. Outsourcing.
- B. Overall objectives of the firm.
- C. Organizational structure.
- D. Recent annual budgets.

Answer (A) is incorrect because outsourcing is an operating decision of a more short-term nature.

Answer (B) is **correct**. Strategic planning is the process of setting overall organizational objectives and drafting strategic plans. It is a process of long-term planning. Setting ultimate objectives for the firm is a necessary prelude to developing strategies for achieving those objectives. Plans and budgets are then needed to implement those strategies.

Answer (C) is incorrect because organizational structure, although important in strategic planning, is based upon the firm's overall objectives.

Answer (D) is incorrect because recent annual budgets are a basis for short-term planning.

**[32] Gleim #: 1.32 -- Source: CMA 693 3-9**

A firm's statement of broad objectives or mission statement should accomplish all of the following except

- A. Outlining strategies for technological development, market expansion, and product differentiation.
- B. Defining the purpose of the company.
- C. Providing an overall guide to those in high-level, decision-making positions.
- D. Stating the moral and ethical principles that guide the actions of the firm.

Answer (A) is **correct**. The determination of organizational objectives is the first step in the planning process. A mission statement is a formal, written document that defines the organization's purpose in society, for example, to produce and distribute certain goods of high quality in a manner beneficial to the public, employees, shareholders, and other constituencies. Thus, a mission statement does not announce specific operating plans. It does not describe strategies for technological development, market expansion, or product differentiation because these are tasks for operating management.

Answer (B) is incorrect because a mission statement defines the purpose of the company (some writers differentiate between purpose and mission).

Answer (C) is incorrect because broad objectives provide guidance to those in high-level positions who are responsible for long-range planning.

Answer (D) is incorrect because mission statements increasingly are concerned with ethical principles.



**[38] Gleim #: 1.38 -- Source: CMA 697 3-16**

After the goals of the company have been established and communicated, the next step in the planning process is development of the

- A. Production budget.
- B. Direct materials budget.
- C. Selling and administrative budget.
- D. Sales budget.

Answer (A) is incorrect because the production budget depends on the sales budget, and the direct materials, direct labor, factory overhead, and cost of goods sold budgets depend on the production budget.

Answer (B) is incorrect because the production budget depends on the sales budget, and the direct materials, direct labor, factory overhead, and cost of goods sold budgets depend on the production budget.

Answer (C) is incorrect because selling and administrative costs are dependent on projected sales.

Answer (D) is **correct**. The sales budget is the first step in the operating budget process because it is needed to prepare all of the other budgets. For example, the production budget cannot be prepared until the sales department has determined how many units are needed.

**[40] Gleim #: 1.40 -- Source: CMA 696 3-11**

In planning and controlling capital expenditures, the most logical sequence is to begin with

- A. Analyzing capital addition proposals.
- B. Making capital expenditure decisions.
- C. Analyzing and evaluating all promising alternatives.
- D. Identifying capital addition projects and other capital needs.

Answer (A) is incorrect because analyzing capital addition proposals is a step subsequent to identifying capital addition projects and other capital needs.

Answer (B) is incorrect because making capital expenditure decisions is a step subsequent to identifying capital addition projects and other capital needs.

Answer (C) is incorrect because analyzing and evaluating all promising alternatives is a step subsequent to identifying capital addition projects and other capital needs.

Answer (D) is **correct**. Capital budgeting is a long-term planning process for investments. This process begins with the identification of capital needs, that is, of projects required to achieve organizational goals. The next step is to search for specific investments. The third step is to acquire and analyze information about the potential choices. The fourth step is to select specific investments after considering both qualitative and quantitative factors. The fifth step is to finance the undertakings. The final step is implementation and monitoring.

**[51] Gleim #: 1.51 -- Source: CMA Sample Q3-9**

Which one of the following planning techniques is most likely to be used to determine which business units will receive additional capital and which will be divested?

- A. Competitive strategies model.
- B. Portfolio matrix analysis.
- C. Scenario development.
- D. Situational analysis.

Answer (A) is incorrect because Michael Porter's model of competitive strategies has two variables: competitive advantage and competitive scope. The strategy adopted depends on whether the advantage sought is based on lower cost or product differentiation, and on whether the scope is broad or narrow.

Answer (B) is **correct**. Business units may be treated as elements of an investment portfolio. A portfolio should be efficient in balancing the risk with the rate of return on the portfolio. The expected rate of return of a portfolio is the weighted average of the expected returns of the individual assets in the portfolio. The variability (risk) of a portfolio's return is determined by the correlation of the returns of individual portfolio assets. To the extent the returns are not perfectly positively correlated, variability is decreased. Thus, business units should be selected that increase returns and diversify and reduce risk.

Answer (C) is incorrect because scenario development is a qualitative forecasting method that involves preparing conceptual scenarios of future events, given carefully defined assumptions. It entails writing multiple alternative but equally likely descriptions of future states. A longitudinal scenario indicates how the current circumstances may develop, and a cross-sectional scenario describes possible future states at a designated time.

Answer (D) is incorrect because situational analysis is a method of determining an organization's direction by systematically matching its strengths and weaknesses with its environmental opportunities and threats (referred to as a SWOT analysis).





**[9] Gleim #: 1.9 -- Source: CMA 695 3-17**

The capital budget is a(n)

- A. Plan to ensure that sufficient funds are available for the operating needs of the company.
- B. Exercise that sets the long-range goals of the company including the consideration of external influences.
- C. Plan that coordinates and communicates a company's plan for the coming year to all departments and divisions.
- D. Plan that assesses the long-term needs of the company for plant and equipment purchases.

Answer (A) is incorrect because capital budgeting involves long-term investment needs, not immediate operating needs.

Answer (B) is incorrect because strategic planning establishes long-term goals in the context of relevant factors in the firm's environment.

Answer (C) is incorrect because an operating budget communicates a company's plan for the coming year to all departments.

Answer (D) is **correct**. Capital budgeting is the process of planning expenditures for long-lived assets. It involves choosing among investment proposals using a ranking procedure. Evaluations are based on various measures involving rate of return on investment.

**[10] Gleim #: 1.10 -- Source: CMA 693 4-19**

Capital budgeting techniques are least likely to be used in evaluating the

- A. Acquisition of new aircraft by a cargo company.
- B. Design and implementation of a major advertising program.
- C. Adoption of a new method of allocating nontraceable costs to product lines.
- D. Sale by a conglomerate of an unprofitable division.

Answer (A) is incorrect because new aircraft represent a long-term investment in capital goods.

Answer (B) is incorrect because a major advertising program is a high-cost investment with long-term effects.

Answer (C) is **correct**. Capital budgeting is the process of planning expenditures for investments that are expected to generate returns over a period of more than one year. Thus, capital budgeting concerns the acquisition or disposal of long-term assets and the financing ramifications of such decisions. The adoption of a new method of allocating nontraceable costs to product lines has no effect on a company's cash flows, does not relate to the acquisition of long-term assets, and is not concerned with financing. Hence, capital budgeting is irrelevant to such a decision.

Answer (D) is incorrect because disinvestment decisions should be approached with long-term planning methods applicable to investments.

**[11] Gleim #: 1.11 -- Source: CMA 1294 4-25**

The capital budgeting model that is ordinarily considered the best model for long-range decision making is the

- A. Payback model.
- B. Accounting rate of return model.
- C. Unadjusted rate of return model.
- D. Discounted cash flow model.

Answer (A) is incorrect because the payback method gives no consideration to the time value of money or to returns after the payback period.

Answer (B) is incorrect because the accounting rate of return does not consider the time value of money.

Answer (C) is incorrect because the unadjusted rate of return does not consider the time value of money.

Answer (D) is **correct**. The capital budgeting methods that are generally considered the best for long-range decision making are the internal rate of return and net present value methods. These are both discounted cash flow methods.

[1] Gleim #: 5.1.1 -- Source: CMA 0408 2-001

All of the following are advantages of the use of budgets in a management control system **except** that budgets

- A. Force management planning.
- B. Provide performance criteria.
- C. Promote communication and coordination within the organization.
- D. Limit unauthorized expenditures.

- Answer (A) is **incorrect**. Forcing management planning is an advantage of using budgets.
- Answer (B) is **incorrect**. Providing performance criteria is an advantage of using budgets.
- Answer (C) is **incorrect**. Promoting communication and coordination within the organization is an advantage of using budgets.
- Answer (D) is **correct**. Budgets serve many roles. They force management to plan ahead, communicate organizational goals throughout the organization, and provide criteria for future performance evaluations.

[2] Gleim #: 5.1.2 -- Source: CMA 0205

In the budgeting and planning process for a firm, which one of the following should be completed first?

- A. Sales budget.
- B. Financial budget.
- C. Cost management plan.
- D. Strategic plan.

- Answer (A) is **incorrect**. The sales budget cannot be started until the strategic plan is finished.
- Answer (B) is **incorrect**. The financial budget is a cluster of budgets that cannot be started until the cluster of budgets referred to as the operating budget is finished.
- Answer (C) is **incorrect**. A cost management plan is independent of the firm's stated budget.
- Answer (D) is **correct**. An organization must complete its strategic plan before any specific budgeting can begin. The strategic plan lays out the means by which a firm expects to fulfill its stated mission.

[3] Gleim #: 5.1.3 -- Source: CMA 691 3-2

Each organization plans and budgets its operations for slightly different reasons. Which one of the following is **not** a significant reason for planning?

- A. Providing a basis for controlling operations.
  - B. Forcing managers to consider expected future trends and conditions.
  - C. Ensuring profitable operations.
  - D. Checking progress toward the objectives of the organization.
- Answer (A) is **incorrect**. Control of operations is a goal of planning.
  - Answer (B) is **incorrect**. Forcing managers to consider expected future trends and conditions is a goal of planning.
  - Answer (C) is **correct**. This question is apparently directed toward budgeting. A budget is a realistic plan for the future that is expressed in quantitative terms. It is a planning, control, motivational, and communications tool. A budget promotes goal congruence and coordination among operating units. Unfortunately, a budget does not ensure profitable operations.
  - Answer (D) is **incorrect**. Checking progress toward objectives is a goal of planning.

[4] Gleim #: 5.1.4 -- Source: CMA 692 3-7

The budget that describes the long-term position, goals, and objectives of an entity within its environment is the

- A. Capital budget.
  - B. Operating budget.
  - C. Cash management budget.
  - D. Strategic budget.
- Answer (A) is **incorrect**. Capital budgeting involves evaluating specific long-term investment decisions.
  - Answer (B) is **incorrect**. The operating budget is a short-range management tool.
  - Answer (C) is **incorrect**. Cash management is a short-range consideration related to liquidity.

- Answer (D) is **correct**. Strategic budgeting is a form of long-range planning based on identifying and specifying organizational goals and objectives. The strengths and weaknesses of the organization are evaluated and risk levels are assessed. The influences of environmental factors are forecast to derive the best strategy for reaching the organization's objectives.

**[5] Gleim #: 5.1.5 -- Source: CMA 697 3-20**

Which one of the following best describes the role of top management in the budgeting process? Top management

- A. Should be involved only in the approval process.
- B. Lacks the detailed knowledge of the daily operations and should limit their involvement.
- C. Needs to be involved, including using the budget process to communicate goals.
- D. Needs to separate the budgeting process and the business planning process into two separate processes.

- Answer (A) is **incorrect**. Top managers can use the budget for motivational and communication purposes; they should do more than merely sign off on the finished document.
- Answer (B) is **incorrect**. Top managers should be involved in the budget process even though they lack detailed knowledge of daily operations; the budget can still communicate company objectives and goals.
- Answer (C) is **correct**. Among other things, the budget is a tool by which management can communicate goals to lower-level employees. It is also a tool for motivating employees to reach those goals. For the budget to function in these communication and motivating roles, top management must be involved in the process. This involvement does not extend to dictating the exact numerical contents of the budget since top management lacks a detailed knowledge of daily operations.
- Answer (D) is **incorrect**. The budget process is a part of the overall planning process.

**[6] Gleim #: 5.1.6 -- Source: CMA 692 3-11**

Which one of the following is usually **not** cited as being an advantage of a formal budgetary process?

- A. Forces management to evaluate the reasonableness of assumptions used and goals identified in the budgetary process.
  - B. Ensures improved cost control within the organization and prevents inefficiencies.
  - C. Provides a formal benchmark to be used for feedback and performance evaluation.
  - D. Serves as a coordination and communication device between management and subordinates.
- 
- Answer (A) is **incorrect**. Evaluation of assumptions and identification of goals is one of the planning advantages of budgeting.
  - Answer (B) is **correct**. A budget is a realistic plan for the future expressed in quantitative terms. It is useful for planning, control, motivation, communication, and achieving goal congruence. As a planning tool, a budget forces management to evaluate the reasonableness of assumptions used and goals identified in the budgetary process. As a control tool, the budget provides a formal benchmark to be used for feedback and performance evaluation. As a communication tool, a budget serves to coordinate activities between management and subordinates and provides management with a means of dealing with uncertainty. Despite its advantages, a budget neither ensures improved cost control nor prevents inefficiencies.
  - Answer (C) is **incorrect**. A budget provides a benchmark for feedback and performance evaluation.
  - Answer (D) is **incorrect**. A budget serves communicating and coordinating functions.

**[10] Gleim #: 5.1.10 -- Source: CMA 1292 3-13**

When comparing performance report information for top management with that for lower-level management,

- A. Top management reports are more detailed.
  - B. Lower-level management reports are typically for longer time periods.
  - C. Top management reports show control over fewer costs.
  - D. Lower-level management reports are likely to contain more quantitative data and less financial data.
- 
- Answer (A) is **incorrect**. Top management reports are less detailed. Top management usually practices management by exception.

- Answer (B) is **incorrect**. Lower-level reports are typically more timely. Rapid feedback is necessary to solve operating problems.
- Answer (C) is **incorrect**. Top management is responsible for all costs incurred within the organization, including those incurred in lower level departments.
- Answer (D) is **correct**. Information sent to top management is ordinarily more highly aggregated and less timely than that communicated to managers at operational levels. Top managers are concerned with the organization's overall financial results and long-term prospects and are responsible for the strategic planning function. Lower-level reports contain more quantitative information of an operational nature, e.g., production data.

**[1] Gleim #: 5.2.14 -- Source: CMA 1291 3-21**

A planning calendar in budgeting is the

- A. Calendar period covered by the budget.
  - B. Schedule of activities for the development and adoption of the budget.
  - C. Calendar period covered by the annual budget and the long-range plan.
  - D. Sales forecast by months in the annual budget period.
- Answer (A) is **incorrect**. The period covered by the budget precedes the events in the planning calendar.
  - Answer (B) is **correct**. The budget planning calendar is the schedule of activities for the development and adoption of the budget. It should include a list of dates indicating when specific information is to be provided by each information source to others. The preparation of a master budget usually takes several months. For instance, many firms start the budget for the next calendar year some time in September in hopes of having it completed by December 1. Because all of the individual departmental budgets are based on forecasts prepared by others and the budgets of other departments, it is essential to have a planning calendar to ensure the proper integration of the entire process.
  - Answer (C) is **incorrect**. The period covered by the budget precedes the events in the planning calendar.
  - Answer (D) is **incorrect**. The planning calendar is not associated with sales.

**[2] Gleim #: 5.2.15 -- Source: CMA 1292 3-8**

A budget manual, which enhances the operation of a budget system, is most likely to include

- A. A chart of accounts.
  - B. Distribution instructions for budget schedules.
  - C. Employee hiring policies.
  - D. Documentation of the accounting system software.
- Answer (A) is **incorrect**. A chart of accounts is included in the accounting manual.



- Answer (B) is **correct**. A budget manual describes how a budget is to be prepared. Items usually included in a budget manual are a planning calendar and distribution instructions for all budget schedules. Distribution instructions are important because, once a schedule is prepared, other departments within the organization will use the schedule to prepare their own budgets. Without distribution instructions, someone who needs a particular schedule may be overlooked.
- Answer (C) is **incorrect**. Employee hiring policies are not needed for budget preparation. They are already available in the human resources manual.
- Answer (D) is **incorrect**. Software documentation is not needed in the budget preparation process.

**[3] Gleim #: 5.2.16 -- Source: CMA 0408 2-007**

In developing the budget for the next year, which one of the following approaches would produce the greatest amount of positive motivation and goal congruence?

- A. Permit the divisional manager to develop the goal for the division that in the manager's view will generate the greatest amount of profits.
  - B. Have senior management develop the overall goals and permit the divisional manager to determine how these goals will be met.
  - C. Have the divisional and senior management jointly develop goals and objectives while constructing the corporation's overall plan of operation.
  - D. Have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.
- Answer (A) is **incorrect**. Using division managers to develop their goals does nothing for goal congruence.
  - Answer (B) is **incorrect**. Having senior management set goals would not be as conducive to motivation as would having input from divisions.
  - Answer (C) is **incorrect**. Senior management may not be in a position to develop an implementation plan.
  - Answer (D) is **correct**. Joint development of goals is more conducive to motivation, as is allowing divisional managers to develop the implementation plan. Goal congruence is enhanced when senior management is involved in the budgeting process along with division managers.

[4] Gleim #: 5.2.17 -- Source: CMA 0408 2-008

Which one of the following is **not** an advantage of a participatory budgeting process?

- A. Coordination between departments.
- B. Communication between departments.
- C. Goal congruence.
- D. Control of uncertainties.

- Answer (A) is **incorrect**. Participatory budgeting involves extensive coordination between departments.
- Answer (B) is **incorrect**. Participatory budgeting involves extensive communication between departments.
- Answer (C) is **incorrect**. Goal congruence is one of the advantages of participatory budgeting.
- Answer (D) is **correct**. Uncertainties can be prepared for, but they cannot be subjected to human control through any budget process.

[5] Gleim #: 5.2.18 -- Source: CMA 0408 2-010

Which one of the following statements concerning approaches for the budget development process is correct?

- A. The top-down approach to budgeting will ensure adherence to strategic organizational goals.
- B. To prevent ambiguity, once departmental budgeted goals have been developed, they should remain fixed even if the sales forecast upon which they are based proves to be wrong in the middle of the fiscal year.
- C. With the information technology available, the role of budgets as an organizational communication device has declined.
- D. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.

- Answer (A) is **incorrect**. While a top-down approach can help make strategic goals more consistent, it cannot ensure adherence.
- Answer (B) is **incorrect**. Any budget should be adapted to changing circumstances.
- Answer (C) is **incorrect**. Information technology makes budgeting easier, not less relevant as a means of organizational communication.

- Answer (D) is **correct**. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.

**[7] Gleim #: 5.2.20 -- Source: CMA 697 3-11**

When developing a budget, an external factor to consider in the planning process is

- A. A change to a decentralized management system.
- B. The implementation of a new bonus program.
- C. New product development.
- D. The merger of two competitors.

- Answer (A) is **incorrect**. Changes in management is an internal factor.
- Answer (B) is **incorrect**. Employee compensation is an internal factor.
- Answer (C) is **incorrect**. A new product line is an internal factor.
- Answer (D) is **correct**. Several planning assumptions should be made at the beginning of the budget process. Some of these assumptions are internal factors; others are external to the company. External factors include general economic conditions and their expected trend, governmental regulatory measures, the labor market in the locale of the company's facilities, and activities of competitors, including the effects of mergers.

**[9] Gleim #: 5.2.22 -- Source: CMA 683 4-2**

The primary role of the budget director and the budgeting department is to

- A. Settle disputes among operating executives during the development of the annual operating plan.
  - B. Develop the annual profit plan by selecting the alternatives to be adopted from the suggestions submitted by the various operating segments.
  - C. Justify the budget to the executive committee of the board of directors.
  - D. Compile the budget and manage the budget process.
- Answer (A) is **incorrect**. The budget director has staff, not line, authority. (S)he has a technical and advisory role. The final decision-making responsibility rests with line management.
  - Answer (B) is **incorrect**. The budget director has staff, not line, authority. (S)he has a technical and advisory role. The final decision-making responsibility rests with line management.

- Answer (C) is **incorrect**. The budget director has staff, not line, authority. (S)he has a technical and advisory role. The final decision-making responsibility rests with line management.
- Answer (D) is **correct**. The budget department is responsible for compiling the budget and managing the budget process. The budget director and department are not responsible for actually developing the estimates on which the budget is based. This role is performed by those to whom the resulting budget will be applicable. The budget director has staff, not line, authority. (S)he has a technical and advisory role. The final decision-making responsibility rests with line management.

**[10] Gleim #: 5.2.23 -- Source: CMA 693 3-22**

Which one of the following is **not** considered to be a benefit of participative budgeting?

- A. Individuals at all organizational levels are recognized as being part of the team; this results in greater support of the organization.
- B. The budget estimates are prepared by those in direct contact with various activities.
- C. Managers are more motivated to reach the budget objectives since they participated in setting them.
- D. When managers set the final targets for the budget, senior management need not be concerned with the overall profitability of current operations.

- Answer (A) is **incorrect**. Participative budgeting promotes teamwork.
- Answer (B) is **incorrect**. A participative budget involves those most directly affected.
- Answer (C) is **incorrect**. A participative budget is a powerful motivator.
- Answer (D) is **correct**. One of the behavioral considerations of budgeting is the extent of participation in the process by managers at all levels within the organization. Managers are more motivated to achieve budgeted goals when they are involved in budget preparation. A broad level of participation usually leads to greater support for the budget and the entity as a whole, as well as a greater understanding of what is to be accomplished. Advantages of a participative budget include greater accuracy of budget estimates. Managers with immediate operational responsibility for activities have a better understanding of what results can be achieved and at what costs. Also, managers cannot blame unrealistic objectives as an excuse for not achieving budget expectations when they have helped to establish those objectives. Despite the involvement of lower level managers, senior management must still participate in the budget process to ensure that the combined objectives of the various departments are consistent with profitability objectives of the company.

**[11] Gleim #: 5.2.24 -- Source: CMA 1292 3-23**

The budgeting technique that is most likely to motivate managers is

- A. Top-down budgeting.
- B. Zero-based budgeting.
- C. Program budgeting and review technique.
- D. Bottom-up budgeting.

- Answer (A) is **incorrect**. A top-down budget is less likely to motivate lower level managers who have not participated in its formation.
- Answer (B) is **incorrect**. Zero-based budgeting is a means of adding objectivity to the budget process; employee motivation is not a particular goal.
- Answer (C) is **incorrect**. Program budgets are formulated by objective rather than function.
- Answer (D) is **correct**. Bottom-up budgeting is the best way of motivating managers to meet budget estimates because it permits participation in the budget process. Lower level managers who take part in budgeting decisions are more likely to support the result and less likely to feel that the budget has been imposed from above.

**[12] Gleim #: 5.2.25 -- Source: CMA 0205**

Which one of the following is most important to a successful budgeting effort?

- A. Experienced analysts.
- B. Integrated budget software.
- C. Reliable forecasts and trend analyses.
- D. Top management support.

- Answer (A) is **incorrect**. Experienced analysts are not crucial to success of a budget; “knowing your business” is as important as training in budget preparation.
- Answer (B) is **incorrect**. Integrated budget software is not the most important factor in budget success; fairly large and sophisticated budgets can be prepared with ordinary spreadsheets.
- Answer (C) is **incorrect**. While they are important, reliable forecasts and trend analyses are not the most important factor; a budget must be flexible enough to adapt to changing circumstances.

- Answer (D) is **correct**. An organizational budget requires a significant commitment of internal resources. The single most important factor in assuring its success is for upper management to demonstrate that they take the project seriously and consider it vital to the organization's future.

**[14] Gleim #: 5.2.27 -- Source: CMA 0408 2-003**

All of the following are criticisms of the traditional budgeting process **except** that it

- A. Makes across-the-board cuts when early budget iterations show that planned expenses are too high.
  - B. Incorporates non-financial measures as well as financial measures into its output.
  - C. Overemphasizes a fixed time horizon, such as one year.
  - D. Is not used until the end of the budget period to evaluate performance.
- Answer (A) is **incorrect**. Across-the-board cuts are an easily available solution when traditional budgeting is used.
  - Answer (B) is **correct**. Traditional budgeting focuses strictly on financial measures.
  - Answer (C) is **incorrect**. Traditional budgeting is heavily focused on a fixed time horizon.
  - Answer (D) is **incorrect**. Traditional budgeting is difficult to use throughout the budget period for performance measurement.

**[15] Gleim #: 5.2.28 -- Source: CMA 0408 2-005**

The following sequence of steps is employed by a company to develop its annual profit plan:

- Planning guidelines are disseminated downward by top management after receiving input from all levels of management.
- A sales budget is prepared by individual sales units reflecting the sales targets of the various segments. This provides the basis for departmental production budgets and other related components by the various operating units. Communication is primarily lateral with some upward communication possible.
- A profit plan is submitted to top management for coordination and review. Top management's recommendations and revisions are acted upon by middle management. A revised profit plan is resubmitted for further review to top management.
- Top management grants final approval and distributes the formal plan downward to the various operating units.

This outline of steps best describes which one of the following approaches to budget development?

- A. Imposed budgeting by top management.
- B. Bottom-up approach.
- C. Top-down approach.
- D. Total justification of all activities by operating units.

- Answer (A) is **incorrect**. Top management has received extensive input and cooperation from lower levels through performing these steps.
- Answer (B) is **correct**. A bottom-up approach is characterized by general guidance from the highest levels of management, followed by extensive input from middle and lower management. This sequence of steps aptly describes this process.
- Answer (C) is **incorrect**. These steps describe the opposite of a top-down approach.
- Answer (D) is **incorrect**. Top management is not demanding justification of all activities in the steps described; such a demand would be consistent with a system known as zero-based budgeting.



[16] Gleim #: 5.2.29 -- Source: CMA 0408 2-006

All of the following are advantages of top-down budgeting as opposed to participatory budgeting, **except** that it

- A. Increases coordination of divisional objectives.
  - B. Reduces the time required for budgeting.
  - C. May limit the acceptance of proposed goals and objectives.
  - D. Facilitates implementation of strategic plans.
- Answer (A) is **incorrect**. Since a top-down budget is imposed by upper management, coordinating the objectives of separate divisions is simplified.
  - Answer (B) is **incorrect**. Since a top-down budget is coordinated from above, it is less time-consuming than obtaining lower-level input.
  - Answer (C) is **correct**. Since a top-down budget is imposed by upper management, it has less chance of acceptance (also called buy-in) by those on whom the budget is imposed.
  - Answer (D) is **incorrect**. Since a top-down budget is coordinated from above, the implementation of strategic plans is centralized and thus simplified.

[17] Gleim #: 5.2.30 -- Source: CMA 0408 2-012

Marietta Thomas, Amador Corporation's vice president of planning, has seen and heard it all. She has told the corporate controller that she is "...very upset with the degree of slack that veteran managers use when preparing their budgets." Thomas has considered implementing some of the following activities during the budgeting process.

1. Develop the budgets by top management and issue them to lower-level operating units.
2. Study the actual revenues and expenses of previous periods in detail.
3. Have the budgets developed by operating units and accept them as submitted by a company-wide budget committee.
4. Share the budgets with all employees as a means to reach company goals and objectives.
5. Use an iterative budgeting process that has several "rounds" of changes initiated by operating units and/or senior managers.

Which one of these activities should Amador implement in order to best remedy Thomas' concerns, help eliminate the problems experienced by Amador, and motivate personnel?

- A. 1 only.
- B. 2 and 3.
- C. 2 and 4.
- D. 2, 4, and 5.

- Answer (A) is **incorrect**. A budget imposed from the top is more likely to encounter resistance.
- Answer (B) is **incorrect**. Operating units will tend to consider only their own interests when preparing budgets.
- Answer (C) is **incorrect**. While studying previous periods and sharing the budget with all employees are important steps to correcting Amador's problems, incrementally improving the budget through an iterative process is also crucial.
- Answer (D) is **correct**. Steps 2, 4, and 5 are appropriate for alleviating Amador's budget problems. Step 1 should not be performed because a budget imposed from the top is more likely to encounter resistance. Step 3 should not be performed because operating units will tend to consider only their own interests when preparing budgets.

**[18] Gleim #: 5.2.31 -- Source: CMA 0408 2-013**

Budgeting problems where departmental managers are repeatedly achieving easy goals or failing to achieve demanding goals can be best minimized by establishing

- A. Preventive controls.
- B. A policy that allows managers to build slack into the budget.
- C. Participative budgeting where managers pursue objectives consistent with those set by top management.
- D. Better communication whereby managers discuss budget matters daily with their superiors.

- Answer (A) is **incorrect**. Preventive controls is much too vague a term in this circumstance.
- Answer (B) is **incorrect**. A policy allowing budgetary slack would make the problem worse.
- Answer (C) is **correct**. Participative budgeting is a practical means of setting realistic, achievable budget goals.
- Answer (D) is **incorrect**. Simply discussing budget matters more often does not inject discipline into the process.

**[19] Gleim #: 5.2.32 -- Source: CMA 0408 2-015**

Which one of the following items would most likely cause the planning and budgeting system to fail? The lack of

- A. Historical financial data.
- B. Input from several levels of management.
- C. Top management support.
- D. Adherence to rigid budgets during the year.

- Answer (A) is **incorrect**. The lack of historical data is not fatal to an adequate planning and budgeting process.
- Answer (B) is **incorrect**. Input from several levels of management is helpful, but not the most essential element of successful budgeting.
- Answer (C) is **correct**. Top management's belief in and support of the planning and budgeting process is the single most important element in its success.
- Answer (D) is **incorrect**. Willingness to adapt to changing circumstances is crucial to the success of any planning and budget system.

[20] Gleim #: 5.2.33 -- Source: CMA 0408 2-016

All of the following are disadvantages of top-down budgeting as opposed to participatory budgeting, **except** that it

- A. May result in a budget that is not possible to achieve.
  - B. May limit the acceptance of proposed goals and objectives.
  - C. Reduces the communication between employees and management.
  - D. Reduces the time required for budgeting.
- Answer (A) is **incorrect**. A budget established without lower-level input may contain unrealistic goals.
  - Answer (B) is **incorrect**. Since a top-down budget is imposed by upper management, it has less chance of acceptance (also called buy-in) by those on whom the budget is imposed.
  - Answer (C) is **incorrect**. Reduced communication between employees and management is a disadvantage of top-down budgeting.
  - Answer (D) is **correct**. Since a top-down budget is coordinated from above, it is less time-consuming than obtaining lower-level input.

[21] Gleim #: 5.2.34 -- Source: CMA 0408 2-017

Suboptimal decision making is **not** likely to occur when

- A. There is little congruence among the overall organization goals, the subunit goals, and the individual goals of decision makers.
  - B. Goals and standards of performance are set by the top management.
  - C. Guidance is given to subunit managers about how standards and goals affect them.
  - D. The subunits in the organization compete with each other for the same input factors or for the same customers.
- Answer (A) is **incorrect**. Low congruence among the overall organization goals, the subunit goals, and the individual goals of decision makers increases the chances of suboptimal decision making.
  - Answer (B) is **incorrect**. When goals and standards are dictated by the top management, the chances of suboptimal decision making are increased.
  - Answer (C) is **correct**. Suboptimal decision making is not likely to occur when guidance is given to subunit managers about how standards and goals affect them.

- Answer (D) is **incorrect**. When the subunits in the organization compete with each other for the same input factors or for the same customers, the chances of suboptimal decision making are increased.

**[22] Gleim #: 5.2.35 -- Source: CMA 691 3-6**

The budgeting process should be one that motivates managers and employees to work toward organizational goals. Which one of the following is **least** likely to motivate managers?

- A. Setting budget targets at attainable levels.
- B. Participation by subordinates in the budgetary process.
- C. Use of management by exception.
- D. Having top management set budget levels.

- Answer (A) is **incorrect**. Setting budget targets at attainable levels is a means of increasing employee motivation.
- Answer (B) is **incorrect**. Participation by subordinates in the budgetary process is a means of increasing employee motivation.
- Answer (C) is **incorrect**. Use of management by exception is a means of increasing employee motivation.
- Answer (D) is **correct**. A budget is potentially a good motivational tool. If lower-level managers have participated in preparing the budget, instead of simply receiving a budget imposed by top management, they are more likely to understand and share the goals of top management and to work to keep costs within the budget. Participation and understanding are also likely to result in budgets that are reasonably attainable and viewed as realistic. However, a budget is also a motivator in the sense that managers are accountable for variances in controllable costs but are rewarded for good performance. Moreover, budgeting coupled with analysis of variances tends to improve motivation by allowing upper-level managers to concentrate on problems (exceptions) rather than engaging in routine supervision of subordinates, which may be viewed as unnecessarily intrusive and unwelcome.

[1] Gleim #: 5.3.36 -- Source: CMA 0408 2-022

Jura Corporation is developing standards for the next year. Currently XZ-26, one of the material components, is being purchased for \$36.45 per unit. It is expected that the component's cost will increase by approximately 10% next year and the price could range from \$38.75 to \$44.18 per unit, depending on the quantity purchased. The appropriate standard for XZ-26 for next year should be set at the

- A. Current actual cost plus the forecasted 10% price increase.
  - B. Lowest purchase price in the anticipated range to keep pressure on purchasing to always buy in the lowest price range.
  - C. Highest price in the anticipated range to ensure that there are only favorable purchase price variances.
  - D. Price agreed upon by the purchasing manager and the appropriate level of company management.
- Answer (A) is **incorrect**. The actual cost could be more or less depending in the quantity purchased.
  - Answer (B) is **incorrect**. The lowest price may not always be in the company's best interests if the quantity required to obtain the lowest price would lead to much higher carrying costs.
  - Answer (C) is **incorrect**. Standards should be set tightly enough to provide motivation to purchasing management.
  - Answer (D) is **correct**. Standard prices are designed for internal performance measurement. Standards should be attainable, but not so easily as to not provide motivation. Management should decide its objectives and set a standard that will achieve that objective when the standard is met. For example, the lowest price might not be selected if the company is using a JIT system, for which the primary objective is the minimization of inventories.

**[2] Gleim #: 5.3.37 -- Source: CMA 0408 2-024**

After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be inconsistent with the consultant's conclusion?

- A. A review of performance reports revealed the presence of many unfavorable efficiency variances.
  - B. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
  - C. Management noted that minimal incentive bonuses have been paid in recent periods.
  - D. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases on output being followed by rapid, sustained declines.
- Answer (A) is **incorrect**. Many unfavorable efficiency variances would be an indicator of too-tight standards.
  - Answer (B) is **correct**. It is highly unlikely that workers familiar with their own processes would set too-tight standards.
  - Answer (C) is **incorrect**. The widespread failure for expected bonuses to be earned would be an indicator of too-tight standards.
  - Answer (D) is **incorrect**. The situation described is indicative of rush jobs being too common, which is a result of poor production planning, not tight labor standards.

**[3] Gleim #: 5.3.38 -- Source: CMA 0408 2-020**

When compared with ideal standards, practical standards

- A. Produce lower per-unit product costs.
  - B. Result in a less desirable basis for the development of budgets.
  - C. Incorporate very generous allowance for spoilage and worker inefficiencies.
  - D. Serve as a better motivating target for manufacturing personnel.
- Answer (A) is **incorrect**. The effect of one type of standard over another cannot guarantee lower costs.
  - Answer (B) is **incorrect**. Practical standards are more appropriate in most cases than ideal standards in the development of budgets.
  - Answer (C) is **incorrect**. An acceptance of high levels of spoilage and worker inefficiencies cannot be overcome through the use of standards.



- Answer (D) is **correct**. Practical standards, also called attainable standards, are more likely to meet with worker acceptance than standards based on an unachievable ideal.

**[4] Gleim #: 5.3.39 -- Source: CMA 0408 2-021**

Diana Stinson, Cherry Valley, Inc.'s factory manager, had lost her patience. Six months ago, she appointed a team from the production and service departments to finalize the allocation of costs and setting of standard costs. They were still feuding, so she hired Brennan and Rose, a large consulting firm, to resolve the matter.

All of the following are potential consequences of having the standards set by Brennan and Rose **except** that

- A. Brennan and Rose may not fully understand Cherry Valley's manufacturing process, resulting in suboptimal performance.
  - B. Employees could react negatively since they did not participate in setting the standards.
  - C. There could be dissatisfaction if the standards contain costs that are not controllable by the unit held responsible.
  - D. The standards may appear to lack management support.
- Answer (A) is **incorrect**. Brennan and Rose may not fully understand Cherry Valley's manufacturing process, resulting in suboptimal performance.
  - Answer (B) is **incorrect**. Employees could react negatively since they did not participate in setting the standards.
  - Answer (C) is **incorrect**. There could be dissatisfaction if the standards contain costs that are not controllable by the unit held responsible.
  - Answer (D) is **correct**. Of the choices listed, this one is not a potential consequence of having an outside consultant set standards. Since management did the hiring, the consultant's work product would naturally appear to have management support.

**[5] Gleim #: 5.3.40 -- Source: CMA 0408 2-018**

All of the following statements concerning standard costs are correct **except** that

- A. Time and motion studies are often used to determine standard costs.
- B. Standard costs are usually set for one year.
- C. Standard costs can be used in costing inventory accounts.
- D. Standard costs are usually stated in total, while budgeted costs are usually stated on a per-unit basis.

- Answer (A) is **incorrect**. Time and motion studies are often used to determine standard costs.
- Answer (B) is **incorrect**. Standard costs are usually set for one year.
- Answer (C) is **incorrect**. Standard costs can be used in costing inventory accounts.
- Answer (D) is **correct**. Standard costs can be used at the per-unit level and any level of aggregation above.

**[6] Gleim #: 5.3.41 -- Source: CMA 0408 2-019**

One approach for developing standard costs incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management. This approach would best be characterized as a(n)

- A. Imposed approach.
- B. Centralized top-down approach.
- C. Engineering approach.
- D. Team development approach.

- Answer (A) is **incorrect**. The approach described is the opposite of an imposed approach.
- Answer (B) is **incorrect**. A centralized top-down approach involves standards being dictated by upper management.
- Answer (C) is **incorrect**. An engineering approach involves only engineers.
- Answer (D) is **correct**. A team development approach to standard setting involves interaction among various groups or individuals, including product line managers, the departments for which the standards are being developed, accountants, and industrial engineers.

**[1] Gleim #: 6.1.1 -- Source: CMA 0205**

In an organization that plans by using comprehensive budgeting, the master budget is

- A. A compilation of all the separate operational and financial budget schedules of the organization.
- B. The booklet containing budget guidelines, policies, and forms to use in the budgeting process.
- C. The current budget updated for operations for part of the current year.
- D. A budget of a not-for-profit organization after it is approved by the appropriate authoritative body.

- Answer (A) is **correct**. A company's overall budget, often called the master or comprehensive budget, encompasses the organization's operating and financial plans for a specified period, ordinarily a year. Thus, all other budgets are subsets of the master budget. In the operating budget, the emphasis is on obtaining and using current resources. In the financial budget, the emphasis is on obtaining the funds needed to purchase operating assets.
- Answer (B) is **incorrect**. The booklet containing budget guidelines, policies, and forms to use in the budgeting process is the budget manual.
- Answer (C) is **incorrect**. The current budget updated for operations for part of the current year is a continuous budget.
- Answer (D) is **incorrect**. A master budget may be prepared by a for-profit entity.

**[3] Gleim #: 6.1.3 -- Source: CMA 0205 2-3**

In preparing a corporate master budget, which one of the following is most likely to be prepared last?

- A. Sales budget.
- B. Cash budget.
- C. Production budget.
- D. Cost of goods sold budget.

- Answer (A) is **incorrect**. The sales budget precedes the cash budget.

- Answer (B) is **correct**. The cash budget is the lynchpin of the financial budget. It combines the results of the operating budget with the cash collection and disbursement schedules to produce a comprehensive picture of where the company's cash flows are expected to come from and where they are expected to go. All the other budgets listed feed the cash budget in one way or another.
- Answer (C) is **incorrect**. The production budget is the second step in the master budget, immediately following the sales budget.
- Answer (D) is **incorrect**. The cost of goods sold budget is completed well before the cash budget in the budgeting process.

**[4] Gleim #: 6.1.4 -- Source: CMA 694 3-11**

The master budget process usually begins with the

- A. Production budget.
- B. Operating budget.
- C. Financial budget.
- D. Sales budget.

- Answer (A) is **incorrect**. The production budget normally cannot be prepared until the expected sales are known.
- Answer (B) is **incorrect**. The operating budget is another term for the budget used on a day-to-day basis for managing operations. It cannot be prepared until after the sales budget is prepared.
- Answer (C) is **incorrect**. Preparation of the sales budget is the first step in the overall budgeting process.
- Answer (D) is **correct**. The starting point for the annual budget is the sales forecast. All other aspects of the budget, including production, costs, and inventory levels, rely on projected sales figures.

**[5] Gleim #: 6.1.5 -- Source: CMA 1295 3-18**

All of the following are considered operating budgets **except** the

- A. Sales budget.
- B. Materials budget.
- C. Production budget.
- D. Capital budget.

- Answer (A) is **incorrect**. It is considered an operating budget.
- Answer (B) is **incorrect**. It is considered an operating budget.
- Answer (C) is **incorrect**. It is considered an operating budget.
- Answer (D) is **correct**. The operating budget consists of all budgets that concern normal operating activities, including the sales budget, production budget, materials budget, direct labor budget, and factory overhead budget. The capital expenditures budget, which outlines needs for new capital investment, is not a part of normal operations. The capital expenditures budget is sometimes prepared more than a year in advance to allow sufficient time to secure financing for these major expenditures.

**[6] Gleim #: 6.1.6 -- Source: CMA 1296 3-15**

Which one of the following items is the last schedule to be prepared in the normal budget preparation process?

- A. Cash budget.
- B. Cost of goods sold budget.
- C. Manufacturing overhead budget.
- D. Selling expense budget.

- Answer (A) is **correct**. The last schedule prepared before the financial statements is the cash budget. The cash budget is a schedule of estimated cash collections and payments. The various operating budgets and the capital budget are inputs to the cash budgeting process.
- Answer (B) is **incorrect**. The cost of goods sold budget provides information necessary to prepare the cash budget.
- Answer (C) is **incorrect**. The manufacturing overhead budget provides information necessary to prepare the cash budget.
- Answer (D) is **incorrect**. The selling expense budget provides information necessary to prepare the cash budget.

**[7] Gleim #: 6.1.7 -- Source: CMA 1292 3-10**

Pro forma financial statements are part of the budgeting process. Normally, the last pro forma statement prepared is the

- A. Capital expenditure plan.
- B. Income statement.
- C. Statement of cost of goods sold.
- D. Statement of cash flows.

- Answer (A) is **incorrect**. The capital expenditure plan must be prepared before the cash budget. Cash may be needed to pay for capital purchases.
- Answer (B) is **incorrect**. The income statement must be prepared before the statement of cash flows, which reconciles net income and net operating cash flows.
- Answer (C) is **incorrect**. Cost of goods sold is included in the income statement, which is an input to the statement of cash flows.
- Answer (D) is **correct**. The statement of cash flows is usually the last of the listed items prepared. All other elements of the budget process must be completed before it can be developed.

**[8] Gleim #: 6.1.8 -- Source: CIA 1190 IV-17**

The master budget

- A. Shows forecasted and actual results.
- B. Reflects controllable costs only.
- C. Can be used to determine manufacturing cost variances.
- D. Contains the operating budget.

- Answer (A) is **incorrect**. The master budget does not contain actual results.
- Answer (B) is **incorrect**. The master budget reflects all applicable expected costs, whether or not controllable by individual managers.
- Answer (C) is **incorrect**. The master budget is not structured to allow determination of manufacturing cost variances, which requires using the flexible budget and actual results.
- Answer (D) is **correct**. All other budgets are subsets of the master budget. Thus, quantified estimates by management from all functional areas are contained in the master budget. These results are then combined in a formal quantitative model recognizing the organization's objectives, inputs, and outputs.

**[9] Gleim #: 6.1.9 -- Source: CMA 692 3-9**

The preparation of a comprehensive master budget culminates with the preparation of the

- A. Production budget.
- B. Capital investment budget.
- C. Cash management and working capital budget.
- D. Strategic budget.

- Answer (A) is **incorrect**. The production budget must precede the capital investment and cash budgets.
- Answer (B) is **incorrect**. A capital investment budget is prepared before a cash budget.
- Answer (C) is **correct**. The comprehensive master budget begins with the preparation of the sales budget and proceeds to the production budget.
- Answer (D) is **incorrect**. A strategic budget is a long-range planning tool that is prepared before the master budget.

**[10] Gleim #: 6.1.10 -- Source: CMA 691 3-1**

Wilson Company uses a comprehensive planning and budgeting system. The proper order for Wilson to prepare certain budget schedules would be

- A. Cost of goods sold, balance sheet, income statement, and statement of cash flows.
- B. Income statement, balance sheet, statement of cash flows, and cost of goods sold.
- C. Statement of cash flows, cost of goods sold, income statement, and balance sheet.
- D. Cost of goods sold, income statement, balance sheet, and statement of cash flows.

- Answer (A) is **incorrect**. The balance sheet should not precede the income statement.
- Answer (B) is **incorrect**. The income statement cannot precede cost of goods sold.
- Answer (C) is **incorrect**. The statement of cash flows cannot precede the cost of goods sold. The latter is an input of the former.
- Answer (D) is **correct**. The pro forma cost of goods sold must be prepared before the pro forma income statement because it is a component of the income statement. Also, the income statement must be prepared before the pro forma balance sheet because net income is a necessary part of preparing the stockholders' equity section of the balance sheet. In turn, the income statement and the balance sheet are necessary for estimating cash flows. If the statement of cash flows is prepared using the indirect method, balance sheet data, e.g., the changes in accounts receivable, inventory, and accounts payable, must be available to determine the adjustments needed to reconcile net income to net cash flow.



[11] Gleim #: 6.1.11 -- Source: CMA 692 3-10

Which one of the following may be considered an independent item in the preparation of the master budget?

- A. Ending inventory budget.
- B. Capital investment budget.
- C. Pro forma income statement.
- D. Pro forma statement of financial position.

- Answer (A) is **incorrect**. The ending inventory budget is based on the current production budget.
- Answer (B) is **correct**. The capital investment budget may be prepared more than a year in advance, unlike the other elements of the master budget. Because of the long-term commitments that must be made for some types of capital investments, planning must be done far in advance and is based on needs in future years as opposed to the current year's needs.
- Answer (C) is **incorrect**. The pro forma income statement is based on the sales budget, expense budgets, and all other elements of the current master budget.
- Answer (D) is **incorrect**. The pro forma balance sheet is based on the other elements of the current master budget.

[12] Gleim #: 6.1.12 -- Source: CMA 697 3-21

The Yummy Dog Bone Company is anticipating that a major supplier might experience a strike this year. Because of the nature of the product and emphasis on quality, extra production cannot be stored as finished goods inventory. When developing a contingency budget that would anticipate a direct materials buildup, the two most significant items that will be affected are

- A. Production volume and direct material.
- B. Sales and ending inventory.
- C. Production and cash flow.
- D. Direct materials and cash flow.

- Answer (A) is **incorrect**. The nature of the product prevents an increase in production volume to augment finished goods inventory.

- Answer (B) is **incorrect**. Sales are dependent on demand, a factor not affected by the strike. Sales may decrease, however, if the company suffers a stockout. Furthermore, ending finished goods inventory cannot increase because of the nature of the product.
- Answer (C) is **incorrect**. The nature of the product prevents an increase in production volume to augment finished goods inventory.
- Answer (D) is **correct**. The most significant items are those that will vary between the contingency budget and the regular budget. The company cannot increase its finished goods inventory, but it can increase its inventory of the direct materials provided by the supplier. Thus, the items most affected will be direct materials and cash. The cash budget will be affected because of the need to pay for direct materials prior to their usage.

**[13] Gleim #: 6.1.13 -- Source: CMA 0408 2-031**

Many companies use comprehensive budgeting in planning for the next year's activities. When both an operating budget and a financial budget are prepared, which one of the following is correct concerning the financial budget?

	<u>Included in the Financial Budget</u>		
	Capital Budget	Pro-forma Balance Sheet	Cash Budget
A.	Yes	No	Yes
B.	No	Yes	No
C.	Yes	Yes	Yes
D.	No	No	No

- Answer (A) is **incorrect**. The pro forma balance sheet is part of the financial budget.
- Answer (B) is **incorrect**. The capital budget and cash budget are part of the financial budget.
- Answer (C) is **correct**. In the financial budget, the emphasis is on obtaining the funds needed to purchase operating assets. It contains the capital budget, projected cash disbursement schedule, projected cash collection schedule, cash budget, pro forma balance sheet, and pro forma statement of cash flows.
- Answer (D) is **incorrect**. All three of these items are part of the financial budget.

**[14] Gleim #: 6.1.14 -- Source: CMA 0205 2-7**

The starting point for creating a master budget for a proprietary secretarial school would be

- A. Estimating salaries of the instructors.
- B. Forecasting enrollment.
- C. Preparing a capital expenditure budget.
- D. Preparing the student recruiting budget.

- Answer (A) is **incorrect**. Instructor salaries will be addressed in the direct labor budget.
- Answer (B) is **correct**. The sales forecast drives all the other components of the operating budget. How much revenue the firm expects to bring in affects every other decision.
- Answer (C) is **incorrect**. Since the capital budget spans multiple budget periods, it must be prepared outside the operating budget cycle and often must be approved by the board of directors.
- Answer (D) is **incorrect**. The student recruiting budget is part of the marketing budget, which is prepared near the end of the operating budget process.

**[16] Gleim #: 6.1.16 -- Source: CMA 694 3-10**

The financial budget process includes

- A. The cash budget.
- B. The capital budget.
- C. The budgeted statement of cash flows.
- D. All of the answers are correct.

- Answer (A) is **incorrect**. All of the listed budgets are elements of the financial budget process.
- Answer (B) is **incorrect**. All of the listed budgets are elements of the financial budget process.
- Answer (C) is **incorrect**. All of the listed budgets are elements of the financial budget process.
- Answer (D) is **correct**. The financial budget normally includes the capital budget, the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows.

[1] Gleim #: 6.5.50 -- Source: CMA 1289 4-8

The foundation of a profit plan is the

- A. Capital budget.
- B. Sales forecast.
- C. Cost and expense budget.
- D. Production plan.

- Answer (A) is **incorrect**. A capital budget is only concerned with capital expenditures and cannot be prepared until it is known whether new equipment or facilities will be needed to service the expected sales for the upcoming period.
- Answer (B) is **correct**. The starting point for the annual budget is the sales forecast. All other aspects of the budget, including production, costs, and inventory levels, rely on projected sales figures.
- Answer (C) is **incorrect**. This aspect of the budget cannot be prepared until sales have been estimated.
- Answer (D) is **incorrect**. Sales must be estimated before a production plan can be prepared.

[2] Gleim #: 6.5.51 -- Source: CMA 1289 4-9

A production plan should be based on

- A. A sales forecast adjusted for projected inventory levels.
- B. Economic order quantities and reorder points.
- C. Exponential smoothing.
- D. Linear regression.

- Answer (A) is **correct**. A production plan depends on the sales budget and anticipated inventory levels. Inventory serves to balance seasonal fluctuations in sales with the need for stable and efficient use of productive resources.
- Answer (B) is **incorrect**. EOQs and reorder points are considered only after it has decided how many units are needed.
- Answer (C) is **incorrect**. Exponential smoothing is a technique used to level or smooth variations encountered in a forecast. A production plan should be based on the variations expected.
- Answer (D) is **incorrect**. Regression analysis explains the correlation of a dependent variable with one or more independent variables. It is based on linearity of costs.

[3] Gleim #: 6.5.52 -- Source: CMA 1290 3-17

The operating budget process usually begins with the

- A. Financial budget.
- B. Balance sheet.
- C. Income statement.
- D. Sales budget.

- Answer (A) is **incorrect**. A financial budget cannot be prepared until after the sales budget has been completed.
- Answer (B) is **incorrect**. A balance sheet cannot be prepared until after the sales budget has been completed.
- Answer (C) is **incorrect**. An income statement cannot be prepared until after the sales budget has been completed.
- Answer (D) is **correct**. The starting point for the annual budget is the sales forecast. All other aspects of the budget, including production, costs, and inventory levels, rely on projected sales figures.

[4] Gleim #: 6.5.53 -- Source: CMA 691 3-3

Adams Manufacturing, Inc., produces farm tractors. The details of its budgeted cost of goods manufactured schedule should come from which of the following schedules?

- A. Cost of goods sold plus or minus the change planned in finished goods.
- B. Direct materials used, direct labor, manufacturing overhead, and work-in-process.
- C. Purchases, direct labor, manufacturing overhead, finished goods, and work-in-process.
- D. Purchases, raw material, work-in-process, and finished goods.

- Answer (A) is **incorrect**. Cost of goods sold equals the cost of goods manufactured adjusted for the change in finished goods. Also, finished goods are not a part of the cost of goods manufactured calculation.
- Answer (B) is **correct**. Cost of goods manufactured equals all manufacturing costs incurred during the period, plus beginning work-in-process inventory, minus ending work-in-process inventory. The cost of goods manufactured schedule therefore includes direct materials, direct labor, factory overhead, and changes in work-in-process inventories.
- Answer (C) is **incorrect**. Purchases is a component of the raw materials budget, not the cost of goods sold schedule, and finished goods are not included in CGM.

- Answer (D) is **incorrect**. CGM includes direct materials used, not purchases or finished goods.

**[5] Gleim #: 6.5.54 -- Source: CMA 691 3-9**

In developing a comprehensive budget for a manufacturing company, which one of the following items should be done first?

- A. Development of a sales plan.
- B. Determination of manufacturing capacity.
- C. Development of the capital budget.
- D. Determination of the advertising budget.

- Answer (A) is **correct**. The starting point for the annual budget is the sales forecast. All other aspects of the budget, including production, costs, and inventory levels, rely on projected sales figures.
- Answer (B) is **incorrect**. The level of manufacturing (production) capacity is fixed in the short run. In the long run, it may be adjusted in accordance with projected sales.
- Answer (C) is **incorrect**. A capital budget cannot be prepared without a sales plan.
- Answer (D) is **incorrect**. Expense budgets are not prepared until the level of operating activity is known.

**[6] Gleim #: 6.5.55 -- Source: CMA 691 3-11**

When budgeting, the items to be considered by a manufacturing firm in going from a sales quantity budget to a production budget would be the

- A. Expected change in the quantity of work-in-process inventories.
- B. Expected change in the quantity of finished goods and work-in-process inventories.
- C. Expected change in the quantity of finished goods and raw material inventories.
- D. Expected change in the availability of raw material without regard to inventory levels.

- Answer (A) is **incorrect**. Finished goods inventories cannot be ignored.
- Answer (B) is **correct**. Production quantities are not identical to sales because of changes in inventory levels. Both finished goods and work-in-process inventories may change during a period, thus necessitating an analysis of both inventory levels before the production budget can be set.
- Answer (C) is **incorrect**. Work-in-process inventory should be considered.

- Answer (D) is **incorrect**. Existing inventories determine production levels.

**[7] Gleim #: 6.5.56 -- Source: CMA 691 3-15**

Which one of the following schedules would be the last item to be prepared in the normal budget preparation process?

- A. Direct labor budget.
- B. Cash budget.
- C. Cost of goods sold budget.
- D. Manufacturing overhead budget.

- Answer (A) is **incorrect**. A direct labor budget must be prepared before the cash budget.
- Answer (B) is **correct**. The budget process begins with the sales budget, proceeds to the production and expense budgets, and eventually the cash budget. The cash budget cannot be prepared until the end of the process because all other budgets provide inputs to the cash budget.
- Answer (C) is **incorrect**. A cost of goods sold budget must be prepared before the cash budget.
- Answer (D) is **incorrect**. A manufacturing overhead budget must be prepared before the cash budget.

**[8] Gleim #: 6.5.57 -- Source: CMA 697 3-16**

After the goals of the company have been established and communicated, the next step in the planning process is development of the

- A. Production budget.
- B. Direct materials budget.
- C. Selling and administrative budget.
- D. Sales budget.

- Answer (A) is **incorrect**. The production budget depends on the sales budget.
- Answer (B) is **incorrect**. The direct materials budget depends on the production budget.
- Answer (C) is **incorrect**. Selling and administrative costs are dependent on projected sales.
- Answer (D) is **correct**. The sales budget is the first step in the operating budget process because it is needed to prepare all of the other budgets. For example, the production budget cannot be prepared until the sales department has determined how many units are needed.



**[9] Gleim #: 6.5.58 -- Source: CMA 694 3-12**

The production budget process usually begins with the

- A. Direct labor budget.
- B. Direct materials budget.
- C. Manufacturing overhead budget.
- D. Sales budget.

- Answer (A) is **incorrect**. The direct labor budget cannot be prepared until after unit production figures have been compiled.
- Answer (B) is **incorrect**. The direct materials budget cannot be prepared until after the unit production figures have been compiled.
- Answer (C) is **incorrect**. The manufacturing overhead budget cannot be prepared until after the unit production figures have been compiled.
- Answer (D) is **correct**. Neither a master budget nor a production budget can be prepared until after the sales budget has been completed. Once a firm knows its expected sales, production can be estimated. The production budget is based on assumptions appearing in the sales budget; thus, the sales budget is the first step in the preparation of a production budget.

**[10] Gleim #: 6.5.59 -- Source: CMA 1295 3-9**

Individual budget schedules are prepared to develop an annual comprehensive or master budget. The budget schedule that would provide the necessary input data for the direct labor budget would be the

- A. Sales forecast.
- B. Raw materials purchases budget.
- C. Schedule of cash receipts and disbursements.
- D. Production budget.

- Answer (A) is **incorrect**. The sales forecast is insufficient for completion of the direct labor budget.
- Answer (B) is **incorrect**. The raw material purchases budget is not needed to prepare a direct labor budget.
- Answer (C) is **incorrect**. The schedule of cash receipts and disbursements cannot be prepared until after the direct labor budget has been completed.

- Answer (D) is **correct**. Once the production budget has been completed, the next step is to prepare the direct labor, raw material, and overhead budgets. Thus, the production budget provides the data for the completion of the direct labor budget.

**[11] Gleim #: 6.5.60 -- Source: CMA 1292 3-9**

The information contained in a cost of goods manufactured budget most directly relates to the

- A. Materials used, direct labor, overhead applied, and ending work-in-process budgets.
- B. Materials used, direct labor, overhead applied, and work-in-process inventories budgets.
- C. Materials used, direct labor, overhead applied, work-in-process inventories, and finished goods inventories budgets.
- D. Materials used, direct labor, overhead applied, and finished goods inventories budgets.

- Answer (A) is **incorrect**. Both beginning and ending work-in-process must be included.
- Answer (B) is **correct**. Cost of goods manufactured equals all manufacturing costs incurred during the period, plus beginning work-in-process inventory, minus ending work-in-process. The cost of goods manufactured schedule therefore includes direct materials, direct labor, factory overhead, and changes in work-in-process inventories.
- Answer (C) is **incorrect**. Finished goods are excluded. They are the end product of the manufacturing process.
- Answer (D) is **incorrect**. Finished goods are excluded. They are the end product of the manufacturing process.

**[12] Gleim #: 6.5.61 -- Source: CMA 1296 3-13**

Which one of the following items should be done first when developing a comprehensive budget for a manufacturing company?

- A. Determination of the advertising budget.
- B. Development of a sales budget.
- C. Development of the capital budget.
- D. Preparation of a pro forma income statement.

- Answer (A) is **incorrect**. The amount of advertising cost depends on the desired level of sales.

- Answer (B) is **correct**. The sales budget is the first to be prepared because all other elements of a comprehensive budget depend on projected sales. For example, the production budget is based on an estimate of unit sales and desired inventory levels. Thus, sales volume affects purchasing levels, operating expenses, and cash flow.
- Answer (C) is **incorrect**. Expenditures for productive capacity are a function of long-term estimates of demand for the firm's products.
- Answer (D) is **incorrect**. Preparation of a pro forma income statement is one of the final steps in the budgetary process. It cannot be prepared until after all sales, production, and expense budgets are finished.

**[13] Gleim #: 6.5.62 -- Source: CMA 695 3-18**

There are various budgets within the master budget cycle. One of these budgets is the production budget. Which one of the following best describes the production budget?

- A. It summarizes all discretionary costs.
  - B. It includes required direct labor hours.
  - C. It includes required material purchases.
  - D. It is calculated from the desired ending inventory and the sales forecast.
- Answer (A) is **incorrect**. A production budget is usually prepared in terms of units of output rather than costs.
  - Answer (B) is **incorrect**. The direct labor budget is prepared after the production budget.
  - Answer (C) is **incorrect**. The materials purchases budget is prepared after the production budget.
  - Answer (D) is **correct**. A production budget is based on sales forecasts, in units, with adjustments for beginning and ending inventories. It is used to plan when items will be produced. After the production budget has been completed, it is used to prepare materials purchases, direct labor, and factory overhead budgets.

**[14] Gleim #: 6.5.63 -- Source: CMA 692 3-8**

The budget that is usually the most difficult to forecast is the

- A. Production budget.
- B. Expense budget.
- C. Sales budget.
- D. Manufacturing overhead budget.

- Answer (A) is **incorrect**. The production budget is based on the sales budget.
- Answer (B) is **incorrect**. Expense budgets are based on sales and production budgets.
- Answer (C) is **correct**. Following the preparation of the sales budget, all other budgets are prepared based on the assumptions used in the sales budget. For this reason, the sales budget is the most difficult to prepare because there are no internal figures to use as a guide. Sales are based on the desires of consumers and the current business climate.
- Answer (D) is **incorrect**. The manufacturing overhead budget is based on the production budget.

**[15] Gleim #: 6.5.64 -- Source: CMA 689 4-27**

When sales volume is seasonal in nature, certain items in the budget must be coordinated. The three most significant items to coordinate in budgeting seasonal sales volume are

- A. Direct labor hours, work-in-process inventory, and sales volume.
  - B. Production volume, finished goods inventory, and sales volume.
  - C. Raw material inventory, direct labor hours, and manufacturing overhead costs.
  - D. Raw material inventory, work-in-process inventory, and production volume.
- Answer (A) is **incorrect**. Direct labor and work-in-process are less directly significant to the desired coordination.
  - Answer (B) is **correct**. The most important items that need to be coordinated in a seasonal business are sales volume and production. The sales budget is the basis for other budgets. The sales projection determines how much needs to be purchased and produced. In turn, projected sales and production (or purchases) must be coordinated with existing quantities on hand (inventory) and with amounts to be held in the future. If a manufacturer faces sharp variations in demand, this coordination becomes especially crucial.
  - Answer (C) is **incorrect**. Direct labor, raw materials, and overhead are less directly significant to the desired coordination.
  - Answer (D) is **incorrect**. Raw materials and work-in-process are less directly significant to the desired coordination.

**[16] Gleim #: 6.5.65 -- Source: CMA 0205**

Maximilian Computer Company uses a comprehensive budgeting system in planning its annual operations. Which of the following best describes the information needed to determine the budgeted cost of circuit boards to be purchased for use in building its laptop computer? Assume one circuit board is used in each laptop.

- A. Begin with budgeted laptop sales in units, add the desired ending inventory of circuit boards, deduct the expected beginning inventory of circuit boards, and multiply the resulting amount by the budgeted purchase cost per circuit board.
- B. Begin with budgeted laptop sales in units, deduct the desired ending inventory of circuit boards, add the expected beginning inventory of circuit boards, and multiply the resulting amount by the purchase cost per circuit board.
- C. Begin with budgeted laptop production in units, deduct the desired ending inventory of circuit boards, add the expected beginning inventory of circuit boards, and multiply the resulting amount by the purchase cost per circuit board.
- D. Begin with budgeted laptop production in units, add the desired ending inventory of circuit boards, deduct the expected beginning inventory of circuit boards, and multiply the resulting amount by the budgeted purchase cost per circuit board.

- Answer (A) is **incorrect**. Sales is an improper figure to begin with for calculating a raw materials budget.
- Answer (B) is **incorrect**. A raw materials budget must begin with the number of materials expected to be consumed, not final goods sold.
- Answer (C) is **incorrect**. Ending inventory should be added, and beginning inventory should be subtracted.
- Answer (D) is **correct**. Since each laptop requires exactly one circuit board, the beginning figure of the calculation equals the number of finished products to be produced:

Units needed for production	X,XXX
Add: desired ending inventory	XXX
Less: beginning inventory	<u>(XXX)</u>
Raw materials to be purchased	X,XXX
Times: per-unit purchase price	<u>× \$ X.XX</u>
Total raw materials cost	<u><u>\$X,XXX</u></u>

**[17] Gleim #: 6.5.66 -- Source: CMA 0408 2-032**

Which one of the combinations listed correctly depicts the chronological order of preparation for the following budgets?

- I. Cost of goods sold budget
- II. Production budget
- III. Purchases budget
- IV. Administrative budget

- A. I, II, III, IV.
- B. III, II, IV, I.
- C. IV, II, III, I.
- D. II, III, I, IV.

- Answer (A) is **incorrect**. The cost of goods sold budget cannot be prepared until the purchases budget is complete.
- Answer (B) is **incorrect**. The purchases budget cannot be prepared until the production budget is complete.
- Answer (C) is **incorrect**. The administrative budget is the last of the four listed to be prepared.
- Answer (D) is **correct**. The components of the operating budget are prepared in the following order: sales budget, production budget, direct materials budget, direct labor budget, manufacturing overhead budget, ending finished goods inventory budget, cost of goods sold budget, and nonmanufacturing budget. This last budget consists of the research and development budget, design budget, marketing budget, distribution budget, customer service budget, and administrative budget.

**[18] Gleim #: 6.5.67 -- Source: CMA 0408 2-034**

Which one of the following best describes the order in which budgets should be prepared when developing the annual master operating budget?

- A. Production budget, direct material budget, revenue budget.
- B. Production budget, revenue budget, direct material budget.
- C. Revenue budget, production budget, direct material budget.
- D. Revenue budget, direct material budget, production budget.

- Answer (A) is **incorrect**. The revenue budget must be completed before the other two can be prepared.

- Answer (B) is **incorrect**. The revenue budget must be completed before the production budget can be prepared.
- Answer (C) is **correct**. The components of the operating budget are prepared in the following order: sales (revenue) budget, production budget, direct materials budget, direct labor budget, manufacturing overhead budget, ending finished goods inventory budget, cost of goods sold budget, and nonmanufacturing budget.
- Answer (D) is **incorrect**. The production budget must be completed before the direct material budget can be prepared.

**[20] Gleim #: 6.5.69 -- Source: CMA 1295 3-17**

When preparing the series of annual operating budgets, management usually starts the process with the

- A. Cash budget.
- B. Balance sheet.
- C. Capital budget.
- D. Sales budget.

- Answer (A) is **incorrect**. It cannot be prepared until the sales budget has been determined.
- Answer (B) is **incorrect**. It cannot be prepared until the sales budget has been determined.
- Answer (C) is **incorrect**. It cannot be prepared until the sales budget has been determined.
- Answer (D) is **correct**. The budgeting process begins with the sales budget and then proceeds to the production budget. Once the production budget is complete, then the raw materials, direct labor, overhead, and cash budgets can be prepared. The capital budget is prepared outside the operating budget process, followed by a cash budget.



[1] Gleim #: 6.3.26 -- Source: CMA 1292 3-12

Barnes Corporation expected to sell 150,000 board games during the month of November, and the company's master budget contained the following data related to the sale and production of these games:

Revenue	\$2,400,000
Cost of goods sold:	
Direct materials	675,000
Direct labor	300,000
Variable overhead	<u>450,000</u>
Contribution margin	\$ 975,000
Fixed overhead	250,000
Fixed selling and administration	<u>500,000</u>
Operating income	<u><u>\$ 225,000</u></u>

Actual sales during November were 180,000 games. Using a flexible budget, the company expects the operating income for the month of November to be

- A. \$225,000
- B. \$270,000
- C. \$420,000
- D. \$510,000

- Answer (A) is **incorrect**. The net income before the increase in sales is \$225,000.
- Answer (B) is **incorrect**. Net income was originally \$1.50 per game. The \$270,000 figure simply extrapolates that amount to sales of 180,000 games.
- Answer (C) is **correct**. Revenue of \$2,400,000 reflects a unit selling price of \$16 ( $\$2,400,000 \div 150,000$  games). The contribution margin is \$975,000, or \$6.50 per game ( $\$975,000 \div 150,000$  games). Increasing sales will result in an increased contribution margin of \$195,000 ( $30,000$  games  $\times$  \$6.50). Since fixed costs are, by their nature, unchanging across the relevant range, net income will increase to \$420,000 ( $\$225,000$  originally reported + \$195,000).
- Answer (D) is **incorrect**. Treating variable overhead as a fixed cost results in \$510,000. Variable overhead is a \$3 component ( $\$450,000 \div 150,000$  units) of unit variable cost.

**[2] Gleim #: 6.3.27 -- Source: CMA 686 4-23**

Simson Company's master budget shows straight-line depreciation on factory equipment of \$258,000. The master budget was prepared at an annual production volume of 103,200 units of product. This production volume is expected to occur uniformly throughout the year. During September, Simson produced 8,170 units of product, and the accounts reflected actual depreciation on factory machinery of \$20,500. Simson controls manufacturing costs with a flexible budget. The flexible budget amount for depreciation on factory machinery for September would be

- A. \$19,475
- B. \$20,425
- C. \$20,500
- D. \$21,500

- Answer (A) is **incorrect**. Depreciation is a fixed cost that will be the same each month regardless of production. The budget for September would show depreciation of \$21,500 ( $\$258,000 \times 1/12$ ).
- Answer (B) is **incorrect**. The amount of \$20,425 is based on the units-of-production method.
- Answer (C) is **incorrect**. The amount shown in the accounts is \$20,500.
- Answer (D) is **correct**. Since depreciation is a fixed cost, that cost will be the same each month regardless of production. Therefore, the budget for September would show depreciation of \$21,500 ( $\$258,000 \text{ annual depreciation} \times 1/12$ ).

**[3] Gleim #: 6.3.28 -- Source: CMA 679 4-8**

A static budget

- A. Drops the current month or quarter and adds a future month or a future quarter as the current month or quarter is completed.
  - B. Presents a statement of expectations for a period but does not present a firm commitment.
  - C. Presents the plan for only one level of activity and does not adjust to changes in the level of activity.
  - D. Presents the plan for a range of activity so that the plan can be adjusted for changes in activity.
- Answer (A) is **incorrect**. Budgets dropping the current month or quarter and adding a future month or quarter as the current month or quarter is completed are known as continuous budgets.

- Answer (B) is **incorrect**. A statement of expectations for a period without a firm commitment is a forecast.
- Answer (C) is **correct**. A static budget plans for only one level of activity and does not provide for changed levels of activity.
- Answer (D) is **incorrect**. A budget planning for a range of activities so the plan can be adjusted for a change in activity level is known as a flexible budget.

**[4] Gleim #: 6.3.29 -- Source: CMA 1292 3-14**

When preparing a performance report for a cost center using flexible budgeting techniques, the planned cost column should be based on the

- A. Budgeted amount in the original budget prepared before the beginning of the year.
- B. Actual amount for the same period in the preceding year.
- C. Budget adjusted to the actual level of activity for the period being reported.
- D. Budget adjusted to the planned level of activity for the period being reported.

- Answer (A) is **incorrect**. The static budget amount is not useful for comparison purposes. The budget for the actual activity level achieved is more important.
- Answer (B) is **incorrect**. Prior-year figures are not useful if activity levels are different.
- Answer (C) is **correct**. If a report is to be used for performance evaluation, the planned cost column should be based on the actual level of activity for the period. The ability to adjust amounts for varying activity levels is the primary advantage of flexible budgeting.
- Answer (D) is **incorrect**. A budget based on planned activity level is not as meaningful as one based on actual activity level.

**[5] Gleim #: 6.3.30 -- Source: CMA 1295 3-10**

Which one of the following statements regarding the difference between a flexible budget and a static budget is true?

- A. A flexible budget primarily is prepared for planning purposes, while a static budget is prepared for performance evaluation.
- B. A flexible budget provides cost allowances for different levels of activity, whereas a static budget provides costs for one level of activity.
- C. A flexible budget includes only variable costs, whereas a static budget includes only fixed costs.
- D. A flexible budget is established by operating management, while a static budget is determined by top management.

- Answer (A) is **incorrect**. Both budgets are prepared for both planning and performance evaluation purposes.
- Answer (B) is **correct**. A flexible budget provides cost allowances for different levels of activity, but a static budget provides costs for only one level of activity. Both budgets show the same types of costs. In a sense, a flexible budget is a series of budgets prepared for many different levels of activity. A flexible budget allows adjustment of the budget to the actual level of activity before comparing the budgeted activity with actual results.
- Answer (C) is **incorrect**. Both budgets include both fixed and variable costs.
- Answer (D) is **incorrect**. Either budget can be established by any level of management.

**[6] Gleim #: 6.3.31 -- Source: CMA 1291 3-13**

A flexible budget is appropriate for

- A. Control of fixed factory overhead but not direct materials and direct labor.
- B. Control of direct materials and direct labor but not selling and administrative expenses.
- C. Any level of activity.
- D. Control of direct labor and direct materials but not fixed factory overhead.

- Answer (A) is **incorrect**. A flexible budget is not necessary for control of costs that will be the same at all levels of activity.
- Answer (B) is **incorrect**. Flexible budgets are useful for controlling variable costs, including variable selling and administrative costs.
- Answer (C) is **incorrect**. A flexible budget is prepared for a specific range of activity levels.
- Answer (D) is **correct**. A flexible budget is actually a series of several budgets prepared for many levels of operating activity. A flexible budget is designed to allow adjustment of the budget to the actual level of activity before comparing the budgeted activity with actual results. This flexibility is important if costs vary with the activity level. Thus, a flexible budget is particularly appropriate for control of direct labor and direct materials (both variable costs), but is not necessary for control of fixed factory overhead. By definition, overhead costs do not change as activity levels change.

**[7] Gleim #: 6.3.32 -- Source: CMA 687 4-17**

Selo Imports uses flexible budgeting for the control of costs. The company's annual master budget includes \$324,000 for fixed production supervisory salaries at a volume of 180,000 units. Supervisory salaries are expected to be incurred uniformly throughout the year. During the month of September, 15,750 units were produced, and production supervisory salaries incurred were \$28,000. A performance report for September would reflect a budget variance of

- A. \$350 favorable.
- B. \$350 unfavorable.
- C. \$1,000 unfavorable.
- D. \$1,000 favorable.

- Answer (A) is **incorrect**. The amount of \$350 results from calculating supervisory salaries on the basis of volume rather than as fixed costs  $\{[(15,750 \text{ units}) \times \$324,000 \div 180,000 \text{ units}] - \$28,000\}$ .
- Answer (B) is **incorrect**. The amount of \$350 results from calculating supervisory salaries on the basis of volume rather than as fixed costs  $\{[15,750 \text{ units} \times (\$324,000 \div 180,000 \text{ units})] - \$28,000\}$ .
- Answer (C) is **correct**. The \$324,000 for supervisory salaries is a fixed cost, at a rate of \$27,000 per month. Since these costs are fixed, volume is irrelevant. Thus, the variance is the difference between actual costs of \$28,000 and the budgeted costs of \$27,000, which equals \$1,000 unfavorable.
- Answer (D) is **incorrect**. The variance is \$1,000 unfavorable. Actual costs are greater than budgeted costs.

**[8] Gleim #: 6.3.33 -- Source: CMA 687 4-18**

Baxter Corporation's master budget calls for the production of 5,000 units of product monthly. The master budget includes indirect labor of \$144,000 annually; Baxter considers indirect labor to be a variable cost. During the month of April, 4,500 units of product were produced, and indirect labor costs of \$10,100 were incurred. A performance report utilizing flexible budgeting would report a budget variance for indirect labor of

- A. \$1,900 unfavorable.
- B. \$700 favorable.
- C. \$1,900 favorable.
- D. \$700 unfavorable.

- Answer (A) is **incorrect**. The amount of \$1,900 is calculated using 5,000 units produced instead of the actual 4,500.
- Answer (B) is **correct**. The \$144,000 annual amount equals \$12,000 per month. Since volume is expected to be 5,000 units per month, and the \$12,000 is considered a variable cost, budgeted cost per unit is \$2.40 ( $\$12,000 \div 5,000$  units). If 4,500 units are produced, the total variable costs should be \$10,800 ( $4,500 \text{ units} \times \$2.40$ ). Subtracting the \$10,100 of actual costs from the budgeted figure results in a favorable variance of \$700.
- Answer (C) is **incorrect**. The \$144,000 annual amount equals \$12,000 per month. Since volume is expected to be 5,000 units per month, and the \$12,000 is considered a variable cost, budgeted cost per unit is \$2.40 ( $\$12,000 \div 5,000$  units). If 4,500 units are produced, the total variable costs should be \$10,800 ( $4,500 \text{ units} \times \$2.40$ ). Subtracting the \$10,100 of actual costs from the budgeted figure results in a favorable variance of \$700.
- Answer (D) is **incorrect**. The \$700 variance is favorable.

**[9] Gleim #: 6.3.34 -- Source: CMA 1291 3-26**

RedRock Company uses flexible budgeting for cost control. RedRock produced 10,800 units of product during October, incurring indirect materials costs of \$13,000. Its master budget for the year reflected indirect materials costs of \$180,000 at a production volume of 144,000 units. A flexible budget for October production would reflect indirect materials costs of

- A. \$13,000
- B. \$13,500
- C. \$13,975
- D. \$11,700

- Answer (A) is **incorrect**. The actual cost of indirect materials in October is \$13,000.
- Answer (B) is **correct**. The cost of indirect materials for 144,000 units was expected to be \$180,000. Consequently, the budgeted unit cost of indirect materials is \$1.25 ( $\$180,000 \div 144,000$ ). Multiplying the \$1.25 unit cost times the 10,800 units actually produced results in an expected total indirect materials cost of \$13,500.
- Answer (C) is **incorrect**. The amount of \$13,975 is not the flexible budget cost for indirect materials.
- Answer (D) is **incorrect**. The amount of \$11,700 is not the flexible budget cost for indirect materials.

**[10] Gleim #: 6.3.35 -- Source: CMA 1296 3-14**

Flexible budgets

- A. Provide for external factors affecting company profitability.
  - B. Are used to evaluate capacity use.
  - C. Are budgets that project costs based on anticipated future improvements.
  - D. Accommodate changes in activity levels.
- Answer (A) is **incorrect**. Flexible budgets address external factors only to the extent that activity is affected.
  - Answer (B) is **incorrect**. A flexible budget essentially restates variable costs for different activity levels within the relevant range. Hence, a flexible budget variance does not address capacity use. An output level (production volume) variance is a fixed cost variance.
  - Answer (C) is **incorrect**. By definition, flexible budgets address differences in activity levels only within the relevant range.
  - Answer (D) is **correct**. A flexible budget is actually a series of budgets prepared for various levels of activity. A flexible budget adjusts the master budget for changes in activity so that actual results can be compared with meaningful budget amounts.

**[12] Gleim #: 6.3.37 -- Source: CMA 0408 2-002**

When compared to static budgets, flexible budgets

- A. Offer managers a more realistic comparison of budget and actual fixed cost items under their control.
  - B. Provide a better understanding of the capacity variances during the period being evaluated.
  - C. Encourage managers to use fewer fixed cost items and more variable cost items that are under their control.
  - D. Offer managers a more realistic comparison of budget and actual revenue and cost items under their control.
- Answer (A) is **incorrect**. The use of fixed costs is a decision involving leverage; flexible budgeting is not relevant.
  - Answer (B) is **incorrect**. While flexible budgeting can provide more useful variances than static budgeting, a better understanding of the variances can only proceed from knowing the business.
  - Answer (C) is **incorrect**. The choice to employ variable costs in preference to fixed costs is a decision involving the degree of leverage; flexible budgeting is not relevant.



- Answer (D) is **correct**. A flexible budget provides managers with the revenues and costs that “should” have been earned and incurred given the actual level of production achieved. This information is far more useful than the static budget prepared before the fiscal period began when the production level was uncertain.

**[13] Gleim #: 6.3.38 -- Source: CMA 691 3-12**

Flexible budgets

- A. Accommodate changes in the inflation rate.
  - B. Are used to evaluate capacity use.
  - C. Are static budgets that have been revised for changes in prices.
  - D. Accommodate changes in activity levels.
- Answer (A) is **incorrect**. Changes in the inflation rate are not addressed any differently in a flexible budget than in a fixed budget.
  - Answer (B) is **incorrect**. The purpose of the flexible budget is to provide plans for different levels of activity.
  - Answer (C) is **incorrect**. A flexible budget is actually a series of static budgets for different operating activity levels.
  - Answer (D) is **correct**. A flexible budget is essentially a series of budgets prepared for various levels of operating activity. A flexible budget facilitates comparison of actual results with budget figures. The purpose is to have a usable budget even though activity may differ from the level originally planned at the time the budget was prepared.

**[2] Gleim #: 6.2.18 -- Source: CMA 0205 2-4**

Which one of the following is **not** an advantage of activity-based budgeting?

- A. Better identification of resource needs.
- B. Linking of costs to outputs.
- C. Identification of budgetary slack.
- D. Reduction of planning uncertainty.

- Answer (A) is **incorrect**. Better identification of resource needs is an advantage of any kind of budgeting.
- Answer (B) is **incorrect**. Linking costs to outputs is a feature of a cost accumulation system, such as job-order or process costing.
- Answer (C) is **incorrect**. Identification of budgetary slack can be built into any budget system, not just an activity-based one.
- Answer (D) is **correct**. Activity-based budgeting applies activity-based costing principles to budgeting. It focuses on the numerous activities necessary to produce and market goods and services and requires analysis of cost drivers. Activity-based budgeting cannot reduce the level of uncertainty to which any large organization is subject.

**[3] Gleim #: 6.2.19 -- Source: CMA 1296 3-1**

An advantage of incremental budgeting when compared with zero-based budgeting is that incremental budgeting

- A. Encourages adopting new projects quickly.
- B. Accepts the existing base as being satisfactory.
- C. Eliminates functions and duties that have outlived their usefulness.
- D. Eliminates the need to review all functions periodically to obtain optimum use of resources.

- Answer (A) is **incorrect**. Both types of budgets treat new projects in the same manner.
- Answer (B) is **correct**. Incremental budgeting simply adjusts the current year's budget to allow for changes planned for the coming year; a manager is not asked to justify the base portion of the budget. ZBB, however, requires a manager to justify the entire budget for each year. Incremental budgeting offers to managers the advantage of requiring less managerial effort to justify changes in the budget.
- Answer (C) is **incorrect**. Reexamining functions and duties that may have outlived their usefulness is an advantage of ZBB.

- Answer (D) is **incorrect**. Periodic review of functions is essential regardless of the budgetary system used.

**[5] Gleim #: 6.2.21 -- Source: CMA 1291 3-22**

A systemized approach known as zero-based budgeting (ZBB)

- A. Presents the plan for only one level of activity and does not adjust to changes in the level of activity.
- B. Presents a statement of expectations for a period of time but does not present a firm commitment.
- C. Divides the activities of individual responsibility centers into a series of packages that are prioritized.
- D. Classifies budget requests by activity and estimates the benefits arising from each activity.

- Answer (A) is **incorrect**. A static budget does not adjust for changes in activity levels.
- Answer (B) is **incorrect**. ZBB does present a firm commitment.
- Answer (C) is **correct**. Zero-based budgeting is a planning process in which each manager must justify a department's entire budget every year (or period). Different levels of service (work effort) are evaluated for each activity, measures of work and performance are established, and activities are ranked (prioritized) according to their importance to the entity. For each budgetary unit, decision packages are prepared that describe various levels of service that may be provided, including at least one level lower than the current one.
- Answer (D) is **incorrect**. Each activity is prepared as a series of packages.

**[7] Gleim #: 6.2.23 -- Source: CMA 1291 3-20**

A continuous profit plan

- A. Is a plan that is revised monthly or quarterly.
- B. Is an annual plan that is part of a 5-year plan.
- C. Is a plan devised by a full-time planning staff.
- D. Works best for a company that can reliably forecast events a year or more into the future.

- Answer (A) is **correct**. A continuous, or rolling, budget (profit plan) is one that is revised on a regular or continuous basis. Typically, a company that uses continuous budgeting extends the budget for another month or quarter in accordance with new data as the current month or quarter ends. For example, if the budget is for 12 months, a budget for the next year will always be available at the end of each interim period. Continuous budgeting encourages a longer-term perspective regardless of how little time remains in the company's current fiscal year.
- Answer (B) is **incorrect**. A continuous profit plan is one that is revised and extended as available information changes.
- Answer (C) is **incorrect**. A continuous plan can be prepared by either a full-time or part-time staff.
- Answer (D) is **incorrect**. It is the lack of reliable long-range information that makes the continuous profit plan so worthwhile.

[8] Gleim #: 6.2.24 -- Source: CMA 694 3-13

A continuous (rolling) budget

- A. Presents the plan for only one level of activity and does not adjust to changes in the level of activity.
  - B. Presents the plan for a range of activity so the plan can be adjusted for changes in activity.
  - C. Is a plan that is revised monthly or quarterly, dropping one period and adding another.
  - D. Is one of the budgets that is part of a long-range strategic plan, unchanged unless the strategy of the company changes.
- Answer (A) is **incorrect**. A continuous budget can be for any level of activity. It need not be a static budget.
  - Answer (B) is **incorrect**. A flexible budget approach is not unique to a continuous budget.
  - Answer (C) is **correct**. A continuous, or rolling, budget is one that is revised monthly or quarterly by dropping one period and adding a new one. Thus, a company desiring a 1-year budget cycle will always have a budget for the next 12 months, regardless of the time of year.
  - Answer (D) is **incorrect**. A continuous budget is frequently revised.

[1] Gleim #: 6.4.39 -- Source: CMA 0205 2-5

The type of budget that is available on a continuous basis for a specified future period -- by adding a month, quarter, or year in the future as the month, quarter, or year just ended is dropped -- is called a(n)

- A. Rolling budget.
- B. Kaizen budget.
- C. Activity-based budget.
- D. Flexible budget.

- Answer (A) is **correct**. A continuous (rolling) budget is one that is revised on a regular (continuous) basis. Typically, a company continuously extends such a budget for an additional month or quarter in accordance with new data as the current month or quarter ends. For example, if the budget cycle is 1 year, a budget for the next 12 months will be available continuously as each month ends. The principal advantage of a rolling budget is that it requires managers always to be thinking ahead.
- Answer (B) is **incorrect**. A kaizen budget is one that assumes the continuous improvement of products and processes.
- Answer (C) is **incorrect**. An activity-based budget is one that applies activity-based costing principles to budgeting.
- Answer (D) is **incorrect**. A flexible budget consists of a series of budgets prepared for many levels of activity.

[2] Gleim #: 6.4.40 -- Source: CMA 1290 3-19

The use of the master budget throughout the year as a constant comparison with actual results signifies that the master budget is also a

- A. Flexible budget.
- B. Capital budget.
- C. Zero-base budget.
- D. Static budget.

- Answer (A) is **incorrect**. A flexible budget can be used in conjunction with standard costs to provide budgets for different activity levels.
- Answer (B) is **incorrect**. A capital budget concerns only long-term investments.
- Answer (C) is **incorrect**. A zero-base budget is one that requires its preparer to fully justify every item in the budget for each period.

- Answer (D) is **correct**. If an unchanged master budget is used continuously throughout the year for comparison with actual results, it must be a static budget, that is, one prepared for just one level of activity.

**[3] Gleim #: 6.4.41 -- Source: CMA 697 3-12**

Which one of the following budgeting methodologies would be most appropriate for a firm facing a significant level of uncertainty in unit sales volumes for next year?

- A. Top-down budgeting.
- B. Life-cycle budgeting.
- C. Static budgeting.
- D. Flexible budgeting.

- Answer (A) is **incorrect**. Top-down budgeting entails imposition of a budget by top management on lower-level employees. It is the antithesis of participatory budgeting.
- Answer (B) is **incorrect**. Life-cycle budgeting estimates a product's revenues and costs for each link in the value chain from R&D and design to production, marketing, distribution, and customer service. The product life cycle ends when customer service is withdrawn.
- Answer (C) is **incorrect**. A static budget is for only one level of activity.
- Answer (D) is **correct**. With flexible budgeting, the firm prepares a series of budgets for many levels of sales and production. At the end of the period, management can compare actual sales performance with the appropriate budgeted level in the flexible budget.

**[4] Gleim #: 6.4.42 -- Source: CMA 695 3-19**

A plan that is created using budgeted revenue and costs but is based on the actual units of output is known as a

- A. Continuous budget.
- B. Flexible budget.
- C. Strategic plan.
- D. Static budget.

- Answer (A) is **incorrect**. A continuous budget is revised on a regular (continuous) basis by extending it for another month or quarter in accordance with new data as the current month or quarter ends.

- Answer (B) is **correct**. A flexible budget is a series of several budgets prepared for many levels of sales and production. A flexible budget is designed to allow adjustment of the budget to the actual level of activity before comparing the budgeted activity with actual results.
- Answer (C) is **incorrect**. A strategic plan is a long-term planning device.
- Answer (D) is **incorrect**. A static (fixed) budget is prepared for only one level of output. That level will probably not be the level of actual operations.

**[5] Gleim #: 6.4.43 -- Source: CMA 694 3-15**

A method of budgeting in which the cost of each program must be justified, starting with the one most vital to the company, is

- A. Flexible budgeting.
- B. Zero-based budgeting.
- C. Continuous budgeting.
- D. Probabilistic budgeting.

- Answer (A) is **incorrect**. Flexible budgeting prepares budgets for varying levels of productivity.
- Answer (B) is **correct**. Zero-based budgeting is an effective means of bringing objective thinking to the budgeting process. The principal advantage of this approach is that managers are forced to review each program in its entirety at the beginning of every budget period, rather than merely extrapolate historical figures.
- Answer (C) is **incorrect**. Continuous budgeting extends budget estimates at interim dates so that a budget for a specified period, usually 12 months, is always available.
- Answer (D) is **incorrect**. Probabilistic budgeting bases budgets on the most likely levels of activity.

**[6] Gleim #: 6.4.44 -- Source: CMA 696 3-14**

Comparing actual results with a budget based on achieved volume is possible with the use of a

- A. Monthly budget.
- B. Master budget.
- C. Rolling budget.
- D. Flexible budget.



- Answer (A) is **incorrect**. Comparing results using a monthly budget is no easier than using a budget of any other duration.
- Answer (B) is **incorrect**. A master budget is the overall budget. It will not facilitate comparisons unless it is also a flexible budget.
- Answer (C) is **incorrect**. A rolling (or continuous) budget is revised on a regular (continuous) basis. It will not facilitate comparisons unless it is also a flexible budget.
- Answer (D) is **correct**. A flexible budget is essentially a series of several budgets prepared for various levels of sales and production. At the end of the period, management can compare actual costs or performance with the appropriate budgeted level in the flexible budget. A flexible budget is designed to allow adjustment of the budget to the actual level of activity before comparing the budgeted activity with actual results.

**[7] Gleim #: 6.4.45 -- Source: CMA 1293 3-18**

The use of standard costs in the budgeting process signifies that an organization has most likely implemented a

- A. Flexible budget.
- B. Capital budget.
- C. Zero-based budget.
- D. Static budget.

- Answer (A) is **correct**. A flexible budget is a series of budgets prepared for various levels of sales and production. Another view is that it is based on cost formulas, or standard costs. Thus, the cost formulas are fed into the computerized budget program along with the actual level of sales or production. The result is a budget created for the actual level of activity.
- Answer (B) is **incorrect**. A capital budget is a means of evaluating long-term investments and has nothing to do with standard costs.
- Answer (C) is **incorrect**. A zero-based budget is a planning process in which each manager must justify a department's entire budget each year. The budget is built from the base of zero each year.
- Answer (D) is **incorrect**. A static budget is for one level of activity. It can be based on expected actual or standard costs.

**[8] Gleim #: 6.4.46 -- Source: CIA 587 III-16**

A manufacturing firm has certain peak seasons; namely the Christmas season, the summer season, and the last 2 weeks of February. During these periods of increased output, the firm leases additional production equipment and hires additional temporary employees. Which of the following budget techniques would best fit this firm's needs?

- A. Flexible budgeting.
- B. Static budgeting.
- C. Zero-based budgeting.
- D. Project budgeting.

- Answer (A) is **correct**. A flexible budget is a series of several budgets prepared for various levels of sales and production. It is designed to allow adjustment of the budget to the actual level of activity before comparing the budgeted activity with actual results. A firm with peak seasons may prefer flexible budgeting because of its difficulties in predicting the activity level.
- Answer (B) is **incorrect**. A static budget is prepared for only one level of sales or production and is appropriate for a firm with little periodic variation in activity.
- Answer (C) is **incorrect**. Zero-based budgeting is a process by which each manager must justify his/her entire budget every period.
- Answer (D) is **incorrect**. Project or program budgeting is used for special projects or programs, not ongoing activities.

**[9] Gleim #: 6.4.47 -- Source: CMA 0408 2-004**

Rainbow, Inc., recently appointed Margaret Joyce as vice president of finance and asked her to design a new budgeting system. Joyce has changed to a monthly budgeting system by dividing the company's annual budget by 12. Joyce then prepared monthly budgets for each department and asked the managers to submit monthly reports comparing actual to budget. A sample monthly report for Department A is shown below.

Rainbow, Inc. Monthly Report for Department A			
	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
Units	1,000	900	100 F
Variable production costs:			
Direct material	\$ 2,800	\$ 2,700	\$ 100 U
Direct labor	4,800	4,500	300 U
Variable factory overhead	4,250	4,050	200 U
Fixed costs:			
Depreciation	3,000	2,700	300 U
Taxes	1,000	900	100 U
Insurance	1,500	1,350	150 U
Administration	1,100	990	110 U
Marketing	1,000	900	100 U
Total costs	<u>\$19,450</u>	<u>\$18,090</u>	<u>\$1,360 U</u>

This monthly budget has been imposed from the top and will create behavior problems. All of the following are causes of such problems **except**

- A. The use of a flexible budget rather than a fixed budget.
  - B. Top management authoritarian attitude toward the budget process.
  - C. The inclusion of noncontrollable costs, such as depreciation.
  - D. The lack of consideration for factors, such as seasonality.
- Answer (A) is **correct**. A flexible budget, which to an extent adapts automatically to changing circumstances, is much more likely to meet with acceptance than an unchanging budget prepared before the period begins.
  - Answer (B) is **incorrect**. A budget imposed from above is likely to lead to undesirable behavior on the part of staff and middle management.
  - Answer (C) is **incorrect**. All costs are controllable at some level of management and thus must be factored into any organization's budget.

- Answer (D) is **incorrect**. Any budget that does not reflect the reality of seasonal activity will meet with resistance by those responsible for generating revenues.

**[10] Gleim #: 6.4.48 -- Source: CMA 0408 2-026**

Country Ovens is a family restaurant chain. Due to an unexpected road construction project, traffic passing by the Country Ovens restaurant in Newtown has significantly increased. As a result, restaurant volume has similarly increased well beyond the level expected. Which type of budget would be most appropriate in helping the restaurant manager plan for restaurant labor costs?

- A. Zero-based budget.
- B. Rolling budget.
- C. Activity-based budget.
- D. Flexible budget.

- Answer (A) is **incorrect**. The purpose of a zero-based budget is to force managers to justify all their anticipated expenses for a period.
- Answer (B) is **incorrect**. The purpose of a rolling budget is to keep a manager's attention focused on the long-term.
- Answer (C) is **incorrect**. The purpose of activity-based budgeting is to appropriately assign indirect costs that would otherwise have to be arbitrarily allocated.
- Answer (D) is **correct**. A flexible budget is adaptable to unanticipated levels of production. Flexible budgeting enables an organization to compute the levels of cost that "should" have been incurred given the level of output actually achieved.

**[11] Gleim #: 6.4.49 -- Source: CMA 0408 2-028**

A budgeting approach that requires a manager to justify the entire budget for each budget period is known as

- A. Performance budgeting.
- B. Program budgeting.
- C. Zero-based budgeting.
- D. Incremental budgeting.

- Answer (A) is **incorrect**. Performance budgeting refers to the way a budget is used, and not how it is developed.

- Answer (B) is **incorrect**. A program budget is a budget that lists budget items by program rather than by type of expense; it could be either zero-based or incremental.
- Answer (C) is **correct**. Zero-based budgeting (ZBB) is a budget and planning process in which each manager must justify his/her department's entire budget every budget cycle. ZBB differs from the traditional concept of incremental budgeting, in which the current year's budget is simply adjusted to allow for changes planned for the coming year.
- Answer (D) is **incorrect**. Incremental budgeting is the traditional budgeting method in which the current year's budget is simply adjusted to allow for changes planned for the coming year.

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[Fact Pattern #1]

Daffy Tunes manufactures a toy rabbit with moving parts and a built-in voice box. Projected sales in units for the next 5 months are as follows:

<u>Month</u>	<u>Projected Sales in Units</u>
January	30,000
February	36,000
March	33,000
April	40,000
May	29,000

Each rabbit requires basic materials that Daffy purchases from a single supplier at \$3.50 per rabbit. Voice boxes are purchased from another supplier at \$1.00 each. Assembly labor cost is \$2.00 per rabbit, and variable overhead cost is \$.50 per rabbit. Fixed manufacturing overhead applicable to rabbit production is \$12,000 per month. Daffy's policy is to manufacture 1.5 times the coming month's projected sales every other month, starting with January (i.e., odd-numbered months) for February sales, and to manufacture 0.5 times the coming month's projected sales in alternate months (i.e., even-numbered months). This allows Daffy to allocate limited manufacturing resources to other products as needed during the even-numbered months.

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[1] Gleim #: 6.6.71 -- Source: CMA 1296 3-4

(Refers to Fact Pattern #1)

Daffy Tunes' unit production budget for toy rabbits for January is

- A. 45,000 units.
- B. 16,500 units.
- C. 54,000 units.
- D. 14,500 units.

- Answer (A) is **incorrect**. The figure of 45,000 is based on January sales.
- Answer (B) is **incorrect**. Budgeted production for February is 16,500 units.
- Answer (C) is **correct**. The production budget for January is 54,000 units (36,000 projected February sales  $\times$  1.5).
- Answer (D) is **incorrect**. Budgeted production for April is 14,500 units.

[2] Gleim #: 6.6.72 -- Source: CMA 1296 3-5

(Refers to Fact Pattern #1)

Daffy Tunes' dollar production budget for toy rabbits for February is

- A. \$327,000
- B. \$390,000
- C. \$113,500
- D. \$127,500

- Answer (A) is **incorrect**. The amount of \$327,000 is based on January sales.
- Answer (B) is **incorrect**. The production budget for January is \$390,000.
- Answer (C) is **incorrect**. The production budget for April is \$113,500.
- Answer (D) is **correct**. The units to be produced in February equal 50% of March sales, or 16,500 units ( $33,000 \times .5$ ). The unit variable cost is \$7.00 ( $\$3.50 + \$1.00 + \$2.00 + \$5.00$ ), so total variable costs are \$115,500 ( $16,500 \times \$7$ ). Thus, the dollar production budget for February is \$127,500 (\$115,500 variable + \$12,000 fixed).

[6] Gleim #: 6.6.76 -- Source: CMA 694 3-7

Zohar Company's budget contains the following information:

Zohar Company	
	<u>Units</u>
Beginning finished goods inventory	85
Beginning work-in-process in equivalent units	10
Desired ending finished goods inventory	100
Desired ending work-in-process in equivalent units	40
Projected sales	1,800

How many equivalent units should Zohar plan to produce?

- A. 1,800
- B. 1,565
- C. 1,815
- D. 1,845

- Answer (A) is **incorrect**. The figure of 1,800 equals projected unit sales.



- Answer (B) is **incorrect**. Units needed for sales minus all inventory amounts equals 1,565.
- Answer (C) is **incorrect**. Finished units needed equals 1,815.
- Answer (D) is **correct**. The finished units needed are calculated as follows:

Needed for sales	1,800
Needed for ending inventory	<u>100</u>
Total finished units needed	1,900
Less: Beginning inventory	<u>(85)</u>
Finished units needed	<u><u>1,815</u></u>

The units to be produced are calculated as follows:

Finished units needed	1,815
Needed for ending inventory	<u>40</u>
Total units in process	1,855
Less: Beginning WIP inventory	<u>(10)</u>
Units to be produced	<u><u>1,845</u></u>

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**[Fact Pattern #2]**

Jordan Auto has developed the following production plan:

<u>Month</u>	<u>Units</u>
January	10,000
February	8,000
March	9,000
April	12,000

Each unit contains 3 pounds of direct materials. The desired direct materials ending inventory each month is 120% of the next month's production, plus 500 pounds. (The beginning inventory meets this requirement.) Jordan has developed the following direct labor standards for production of these units:

	<u>Department 1</u>	<u>Department 2</u>
Hours per unit	2.0	0.5
Hourly rate	\$7.25	\$12.00

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**[7] Gleim #: 6.6.77 -- Source: CMA 697 3-14**

(Refers to Fact Pattern #2)

How much direct materials should Jordan Auto purchase in March?

- A. 27,000 pounds.
- B. 32,900 pounds.
- C. 36,000 pounds.
- D. 37,800 pounds.

- Answer (A) is **incorrect**. The usage for March is 27,000 pounds.
- Answer (B) is **incorrect**. The beginning inventory is 32,900 pounds.
- Answer (C) is **incorrect**. The usage for April is 36,000 pounds.
- Answer (D) is **correct**. Jordan needs 27,000 pounds ( $3 \times 9,000$  units) of materials for March production. It also needs 43,700 pounds  $\{[(3 \times 12,000 \text{ units to be produced in April}) \times 120\%] + 500\}$  for ending inventory. Given a beginning inventory of 32,900 pounds  $\{[(3 \times 9,000 \text{ units to be produced in March}) \times 120\%] + 500\}$ , required purchases equal 37,800 pounds (27,000 pounds + 43,700 pounds – 32,900 pounds).

**[8] Gleim #: 6.6.78 -- Source: CMA 1287 4-29**

The Jung Corporation's budget calls for the following production:

- Qtr 1 -- 45,000 units
- Qtr 2 -- 38,000 units
- Qtr 3 -- 34,000 units
- Qtr 4 -- 48,000 units

Each unit of product requires three pounds of direct material. The company's policy is to begin each quarter with an inventory of direct materials equal to 30% of that quarter's direct material requirements. Budgeted direct materials purchases for the third quarter would be

- A. 114,600 pounds.
- B. 43,200 pounds.
- C. 38,200 pounds.
- D. 30,600 pounds.

- Answer (A) is **correct**. Beginning inventory should be 30,600 pounds (34,000 units of budgeted sales  $\times$  3 pounds  $\times$  30%). Ending inventory should be 43,200 pounds (48,000 units of budgeted sales for Quarter 4  $\times$  3 pounds  $\times$  30%). Since BI plus purchases minus EI equals Quarter 3 budgeted sales, purchases must be 114,600.

$$\begin{aligned} 30,600 + X - 43,200 &= 3 \times 34,000 \\ X - 12,600 &= 102,000 \\ X &= 114,600 \end{aligned}$$

- Answer (B) is **incorrect**. The ending inventory required for the third quarter is 43,200 pounds.
- Answer (C) is **incorrect**. The figure of 38,200 is calculated without taking into account that each unit of product requires 3 pounds of direct materials.
- Answer (D) is **incorrect**. The beginning inventory required for the third quarter is 30,600 pounds.

**[9] Gleim #: 6.6.79 -- Source: CMA 1294 3-19**

Superior Industries' sales budget shows quarterly sales for the next year as follows:

<u>Quarter</u>	<u>Units</u>
1	10,000
2	8,000
3	12,000
4	14,000

Company policy is to have a finished goods inventory at the end of each quarter equal to 20% of the next quarter's sales. Budgeted production for the second quarter of the next year would be

- A. 7,200 units.
  - B. 8,000 units.
  - C. 8,800 units.
  - D. 8,400 units.
- Answer (A) is **incorrect**. Subtracting the beginning inventory twice results in 7,200 units.
  - Answer (B) is **incorrect**. Assuming no change in inventory results in 8,000 units.

- Answer (C) is **correct**. The finished units needed for sales (8,000), plus the units desired for ending inventory (12,000 units to be sold in the third quarter  $\times$  20% = 2,400), minus the units in beginning inventory (8,000 units to be sold in the second quarter  $\times$  20% = 1,600), equals budgeted production for the second quarter of 8,800 units.
- Answer (D) is **incorrect**. Including the beginning inventory for the first quarter, not the second quarter, in the calculation results in 8,400 units.

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**[Fact Pattern #3]**

Superflite expects April sales of its deluxe model airplane, the C-14, to be 402,000 units at \$11 each. Each C-14 requires three purchased components shown below.

	<u>Purchase Cost</u>	<u>Number Needed for Each C-14 Unit</u>
A-9	\$ .50	1
B-6	.25	2
D-28	1.00	3

Factory direct labor and variable overhead per unit of C-14 totals \$3.00. Fixed factory overhead is \$1.00 per unit at a production level of 500,000 units. Superflite plans the following beginning and ending inventories for the month of April and uses standard absorption costing for valuing inventory.

<u>Part No.</u>	<u>Units at April 1</u>	<u>Units at April 30</u>
C-14	12,000	10,000
A-9	21,000	9,000
B-6	32,000	10,000
D-28	14,000	6,000

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**[10] Gleim #: 6.6.80 -- Source: CMA 1293 3-10**

(Refers to Fact Pattern #3)

Superflite's C-14 production budget for April should be based on the manufacture of

- A. 390,000 units.
- B. 400,000 units.
- C. 402,000 units.
- D. 424,000 units.

- Answer (A) is **incorrect**. Not considering the need to produce for ending inventory results in 390,000 units.
- Answer (B) is **correct**. Sales are expected to be 402,000 units in April. The beginning inventory is 12,000 units, and the ending inventory is expected to be 10,000 units, a decline in inventory of 2,000 units. Thus, the budget should be based on production of 400,000 units (402,000 units to be sold – 12,000 units BI + 10,000 units EI).
- Answer (C) is **incorrect**. Sales for the month equals 402,000 units; a portion of these sales will come from the beginning inventory.
- Answer (D) is **incorrect**. The sum of sales and beginning and ending inventories is 424,000 units.

**[11] Gleim #: 6.6.81 -- Source: CMA 1293 3-11**

(Refers to Fact Pattern #3)

Assume Superflite plans to manufacture 400,000 units in April. Superflite's April budget for the purchase of A-9 should be

- A. 379,000 units.
- B. 388,000 units.
- C. 402,000 units.
- D. 412,000 units.

- Answer (A) is **incorrect**. The number of 379,000 units fails to consider the 9,000 units in the ending inventory.
- Answer (B) is **correct**. Each of the 400,000 units to be produced in April will require one unit of A-9, a total requirement of 400,000 units. In addition, ending inventory is expected to be 9,000 units. Hence, 409,000 units must be supplied during the month. Of these, 21,000 are available in the beginning inventory. Subtracting the 21,000 beginning inventory from 409,000 leaves 388,000 to be purchased.
- Answer (C) is **incorrect**. Sales for the month equals 402,000 units.
- Answer (D) is **incorrect**. Adding the decline in inventory of 12,000 to production needs instead of subtracting it results in 412,000.

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**[Fact Pattern #4]**

Simpson, Inc., is in the process of preparing its annual budget. The following beginning and ending inventory levels (in units) are planned for the year ending December 31.

	<u>Beginning Inventory</u>	<u>Ending Inventory</u>
Raw material*	40,000	50,000
Work-in-process	10,000	10,000
Finished goods	80,000	50,000

\*Two units of raw material are needed to produce each unit of finished product.

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**[12] Gleim #: 6.6.82 -- Source: CMA 1294 3-17**

(Refers to Fact Pattern #4)

If Simpson plans to sell 480,000 units during the year, the number of units it would have to manufacture during the year would be

- A. 440,000 units.
- B. 480,000 units.
- C. 510,000 units.
- D. 450,000 units.

- Answer (A) is **incorrect**. Treating beginning work-in-process as beginning finished goods results in 440,000 units.
- Answer (B) is **incorrect**. The figure of 480,000 units assumes no change in finished goods inventory.
- Answer (C) is **incorrect**. Reversing the beginning and ending inventories results in 510,000 units.
- Answer (D) is **correct**. The finished units needed for sales (480,000), plus the units desired for ending inventory (50,000), minus beginning inventory (80,000), equals the necessary production of 450,000 units.

**[13] Gleim #: 6.6.83 -- Source: CMA 1294 3-18**

(Refers to Fact Pattern #4)

If 500,000 finished units were to be manufactured for the year by Simpson, the units of raw material that must be purchased would be

- A. 1,000,000 units.
- B. 1,020,000 units.
- C. 1,010,000 units.
- D. 990,000 units.

- Answer (A) is **incorrect**. Raw material needed for 1995 production only equals 1,000,000 units.
- Answer (B) is **incorrect**. The figure of 1,020,000 units is based on an erroneous doubling of the difference between beginning and ending inventory of raw material.
- Answer (C) is **correct**. The 500,000 finished units to be manufactured require 1,000,000 units of raw material ( $2 \times 500,000$ ). In addition, the inventory of raw material is planned to increase by 10,000 units. Consequently, 1,010,000 units of raw material should be purchased.
- Answer (D) is **incorrect**. Reversing the beginning and ending inventories results in 990,000 units.

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**[Fact Pattern #5]**

Paradise Company budgets on an annual basis for its fiscal year. The following beginning and ending inventory levels (in units) are planned for the fiscal year of July 1 through June 30:

	<u>July 1</u>	<u>June 30</u>
Raw material*	40,000	50,000
Work-in-process	10,000	20,000
Finished goods	80,000	50,000

\* Two (2) units of raw material are needed to produce each unit of finished product.

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**[14] Gleim #: 6.6.84 -- Source: CMA 692 3-29**

(Refers to Fact Pattern #5)

If Paradise Company plans to sell 480,000 units during the fiscal year, the number of units it will have to manufacture during the year is

- A. 440,000 units.
- B. 480,000 units.
- C. 510,000 units.
- D. 450,000 units.

- Answer (A) is **incorrect**. The calculation need not be adjusted for the change in work-in-process. Only finished goods are being discussed.
- Answer (B) is **incorrect**. The amount to be sold is 480,000 units.
- Answer (C) is **incorrect**. The number of 510,000 units equals sales, plus beginning inventory, minus ending inventory.
- Answer (D) is **correct**. If the company sells 480,000 units with an ending finished goods inventory of 50,000 units, 530,000 units must be available. Given 80,000 units are in beginning inventory, production will have to be 450,000 units (530,000 – 80,000).

**[15] Gleim #: 6.6.85 -- Source: CMA 692 3-30**

(Refers to Fact Pattern #5)

If 500,000 complete units were to be manufactured during the fiscal year by Paradise Company, the number of units of raw materials to be purchased is

- A. 1,000,000 units.
- B. 1,020,000 units.
- C. 1,010,000 units.
- D. 990,000 units.

- Answer (A) is **incorrect**. The total needed for production is 1,000,000 units.
- Answer (B) is **incorrect**. The number of units in raw materials is not doubled.
- Answer (C) is **correct**. The total raw materials needed for production will be 1,000,000 units (500,000 units  $\times$  2 units of raw materials). In addition, raw materials inventory is expected to increase by 10,000 units. Thus, raw materials purchases will be 1,010,000.
- Answer (D) is **incorrect**. The number of 990,000 units is less than the amount used in production.

**[Fact Pattern #6]**

Wellfleet Company manufactures recreational equipment and prepares annual operational budgets for each department. The Purchasing Department is finalizing plans for the fiscal year ending June 30, Year 2, and has gathered the information regarding two of the components used in both tricycles and bicycles. Wellfleet uses the first-in, first-out inventory method.

	<u>A19</u>	<u>B12</u>	<u>Tricycles</u>	<u>Bicycles</u>
Beginning inventory, July 1, Year 1	3,500	1,200	800	2,150
Ending inventory, June 30, Year 2	2,000	1,800	1,000	900
Unit cost	\$1.20	\$4.50	\$54.50	\$89.60
Projected fiscal year unit sales	--	--	96,000	130,000
Component usage:				
Tricycles	2/unit	1/unit	--	--
Bicycles	2/unit	4/unit	--	--

**[18] Gleim #: 6.6.88 -- Source: CMA 693 3-7**

(Refers to Fact Pattern #6)

The budgeted dollar value of Wellfleet Company's purchases of component A19 for the fiscal year ending June 30, Year 2 is

- A. \$309,000
- B. \$538,080
- C. \$540,600
- D. \$2,017,800

- Answer (A) is **incorrect**. The cost of the units of A19 needed for bicycle production is \$309,000.
- Answer (B) is **correct**. The inventory of tricycles is expected to increase from 800 units to 1,000 units, an increase of 200 units. Adding this 200-unit inventory increase to the projected sales of 96,000 results in total production of tricycles of 96,200 units. The inventory of bicycles is expected to decline from 2,150 to 900, a decrease of 1,250 units. Subtracting this inventory decline from the 130,000 units of projected sales results in expected production of 128,750 units. Given that each tricycle and bicycle requires two units of A19, the necessary units of the component can be calculated by adding the 96,200 tricycles to the 128,750 bicycles, a total production of 224,950. Multiplying this total production level times the two components required results in a total of 449,900 components. Combining the 449,900 units of A19 needed for production with the desired inventory decrease of 1,500 units (3,500 – 2,000) indicates that 448,400 components must be purchased. At \$1.20 per unit, the total cost of 448,400 units is \$538,080.

- Answer (C) is **incorrect**. The amount of \$540,600 ignores the change in the inventory levels of finished units of tricycles and bicycles.
- Answer (D) is **incorrect**. The amount of \$2,017,800 is based on the price of B12 (\$4.50).

**[19] Gleim #: 6.6.89 -- Source: CMA 693 3-8**

(Refers to Fact Pattern #6)

If the economic order quantity of Component B12 is 70,000 units, the number of times that Wellfleet Company should purchase this component during the fiscal year ended June 30, Year 2, is

- A. Four times.
- B. Five times.
- C. Eight times.
- D. Nine times.

- Answer (A) is **incorrect**. Ordering four times will meet the need for tricycle but not bicycle production.
- Answer (B) is **incorrect**. Ordering five times will meet the need for tricycle but not bicycle production.
- Answer (C) is **incorrect**. Eight orders will suffice only for the bicycles.
- Answer (D) is **correct**. The number of tricycles to be produced is 96,200. Each requires one unit of B12. The number of bicycles to be produced is 128,750. Each requires four units of B12, a total of 515,000. Combining the 96,200 units needed for tricycles with the 515,000 units needed for bicycles results in a total demand of 611,200 units. An additional 600 units (1,800 – 1,200) will have to be ordered to permit the increase in the inventory of B12. Dividing the annual requirement of 611,800 units by the 70,000-unit EOQ results in 8.74 orders per year. Because partial orders are not possible, nine orders will have to be placed.

**[20] Gleim #: 6.6.90 -- Source: CMA 0205 2-6**

A large manufacturer's forecast of total sales revenues for a year is **least** likely to be influenced by

- A. The seasonal pattern of sales revenues throughout the year.
- B. Anticipated interest rates and unemployment rates.
- C. Expected shortages of key raw materials.
- D. Input from sales personnel.

- Answer (A) is **correct**. A large manufacturing firm will be well familiar with the seasonal patterns to which demand for its products is subject. The forecast is being prepared for an entire year, so the cyclical effects of varying demand will be taken into account.
- Answer (B) is **incorrect**. Interest rates and unemployment levels will have a direct impact on a manufacturer's operating and financing budgets.
- Answer (C) is **incorrect**. If shortages of key raw materials are expected, this will have a major impact on a manufacturer's budgeting process.
- Answer (D) is **incorrect**. Input from all levels of the organization is important to a successful budget.

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**[Fact Pattern #7]**

Berol Company plans to sell 200,000 units of finished product in July and anticipates a growth rate in sales of 5% per month. The desired monthly ending inventory in units of finished product is 80% of the next month's estimated sales. There are 150,000 finished units in inventory on June 30. Each unit of finished product requires 4 pounds of direct materials at a cost of \$1.20 per pound. There are 800,000 pounds of direct materials in inventory on June 30.

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**[21] Gleim #: 6.6.91 -- Source: CMA 692 3-25**

(Refers to Fact Pattern #7)

Berol Company's production requirement in units of finished product for the 3-month period ending September 30 is

- A. 712,025 units.
  - B. 630,500 units.
  - C. 638,000 units.
  - D. 665,720 units.
- Answer (A) is **incorrect**. The total estimated sales for the next 4 months, minus beginning inventory for July, equals 712,025 units.
  - Answer (B) is **incorrect**. The total sales for 3 months equals 630,500 units.
  - Answer (C) is **incorrect**. The number of 638,000 units assumes that each succeeding month's sales are 105% of July's.

- Answer (D) is **correct**. Sales are expected to increase at the rate of 5% per month. Given that July sales are estimated to be 200,000 units, August, September, and October sales are expected to be 210,000 units ( $200,000 \times 1.05$ ), 220,500 units ( $210,000 \times 1.05$ ), and 231,525 units ( $220,500 \times 1.05$ ), respectively. Moreover, September ending inventory must be 80% of October's estimated sales, or 185,220 units ( $231,525 \times 80\%$ ). Consequently, the production requirement for the 3-month period is 665,720 units ( $200,000 + 210,000 + 220,500 + 185,220$  September EI – 150,000 July BI).

**[22] Gleim #: 6.6.92 -- Source: CMA 692 3-26**

(Refers to Fact Pattern #7)

Assume Berol Company plans to produce 600,000 units of finished product in the 3-month period ending September 30, and to have direct materials inventory on hand at the end of the 3-month period equal to 25% of the use in that period. The estimated cost of direct materials purchases for the 3-month period ending September 30 is

- A. \$2,200,000
- B. \$2,400,000
- C. \$2,640,000
- D. \$2,880,000

- Answer (A) is **incorrect**. The number of pounds needed to be purchased is 2,200,000.
- Answer (B) is **incorrect**. The number of pounds that will be used is 2,400,000.
- Answer (C) is **correct**. Production of 600,000 units will require 2,400,000 pounds of direct materials ( $600,000 \text{ units} \times 4 \text{ lbs.}$ ). In addition, ending inventory will be 25% of the period's usage, or 600,000 pounds ( $2,400,000 \times 25\%$ ). Thus, 3,000,000 total pounds will be needed. However, given 800,000 pounds in inventory, purchases will be only 2,200,000 pounds. At \$1.20 per pound, the cost will be \$2,640,000.
- Answer (D) is **incorrect**. The \$2,880,000 is obtained by multiplying the total usage times the cost per pound, without considering the change in inventory.

**[24] Gleim #: 6.6.94 -- Source: CMA 0408 2-039**

Hannon Retailing Company prices its products by adding 30% to its cost. Hannon anticipates sales of \$715,000 in July, \$728,000 in August, and \$624,000 in September. Hannon's policy is to have on hand enough inventory at the end of the month to cover 25% of the next month's sales. What will be the cost of the inventory that Hannon should budget for purchase in August?

- A. \$509,600
- B. \$540,000
- C. \$560,000
- D. \$680,000

- Answer (A) is **incorrect**. The amount of \$509,600 results from treating gross profit as 30% of sales rather than as 30% of cost.
- Answer (B) is **correct**. The first step is to determine the cost of goods sold for each month. Since sales are 130% of cost, cost of goods sold can be calculated as follows:

July:	$\$715,000 \div 130\% =$	\$550,000
August:	$728,000 \div 130\% =$	560,000
September:	$624,000 \div 130\% =$	480,000

Purchases for August can now be calculated as follows:

Projected sales at cost	\$560,000
Add: required ending inventory ( $\$480,000 \times 25\%$ )	<u>120,000</u>
Total goods needed	\$680,000
Less: beginning inventory	<u>(140,000)</u>
Purchases	<u><u>\$540,000</u></u>

- Answer (C) is **incorrect**. The amount of \$560,000 results from failing to consider the changes in inventories.
- Answer (D) is **incorrect**. The amount of \$680,000 results from failing to subtract beginning inventory.

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**[Fact Pattern #8]**

Streeter Company produces plastic microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter usually maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter.

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**[25] Gleim #: 6.6.95 -- Source: CMA 0408 2-040**

(Refers to Fact Pattern #8)

How many units should Streeter produce in the second quarter?

- A. 72,000
- B. 75,000
- C. 78,000
- D. 84,000

- Answer (A) is **incorrect**. The figure 72,000 is the level of sales, not production, for the second quarter.
- Answer (B) is **incorrect**. The figure 75,000 is merely the average expected production for the following two quarters.
- Answer (C) is **correct**. Streeter's required production for the second quarter can be calculated as follows:

Sales for quarter	72,000
Add: buffer for next quarter ( $84,000 \times 50\%$ )	42,000
Less: buffer from previous quarter ( $72,000 \times 50\%$ )	<u>(36,000)</u>
Required production	<u><u>78,000</u></u>

- Answer (D) is **incorrect**. The figure 84,000 is the total sales for the third quarter.

[26] Gleim #: 6.6.96 -- Source: CMA 0408 2-044

(Refers to Fact Pattern #8)

Due to a work stoppage, the finished goods inventory at the end of the first quarter is 8,000 units less than it should be. How many units should Streeter produce in the second quarter?

- A. 75,000
- B. 78,000
- C. 80,000
- D. 86,000

- Answer (A) is **incorrect**. The figure 75,000 results from assuming that the discrepancy in beginning inventory occurs in both quarters.
- Answer (B) is **incorrect**. The figure 78,000 fails to account for the shortfall in the buffer from the previous month.
- Answer (C) is **incorrect**. The figure 80,000 is based on the 72,000 level of sales for the quarter instead of the desired production level of 78,000.
- Answer (D) is **correct**. Streeter's required production for the second quarter can be calculated as follows:

Sales for quarter	72,000
Add: buffer for next quarter ( $84,000 \times 50\%$ )	42,000
Less: buffer from previous quarter ( $72,000 \times 50\%$ )	<u>(36,000)</u>
Projected production	78,000
Add: shortfall from previous month buffer	<u>8,000</u>
Revised required production	<u><u>86,000</u></u>



**[27] Gleim #: 6.6.97 -- Source: CMA 0408 2-041**

Tyler Company produces one product and budgeted 220,000 units for the month of August with the following budgeted manufacturing costs:

	<u>Total Costs</u>	<u>Cost Per Unit</u>
Variable costs	\$1,408,000	\$ 6.40
Batch set-up cost	880,000	4.00
Fixed costs	<u>1,210,000</u>	<u>5.50</u>
Total	<u><u>\$3,498,000</u></u>	<u><u>\$15.90</u></u>

The variable cost per unit and the total fixed costs are unchanged within a production range of 200,000 to 300,000 units per month. The total for the batch set-up cost in any month depends on the number of production batches that Tyler runs. A normal batch consists of 50,000 units unless production requires less volume. In the prior year, Tyler experienced a mixture of monthly batch sizes of 42,000 units, 45,000 units, and 50,000 units. Tyler consistently plans production each month in order to minimize the number of batches. For the month of September, Tyler plans to manufacture 260,000 units. What will be Tyler's total budgeted production costs for September?

- A. \$3,754,000
- B. \$3,930,000
- C. \$3,974,000
- D. \$4,134,000

- Answer (A) is **incorrect**. The amount of \$3,754,000 results from failing to account for the setup cost of an additional batch.
- Answer (B) is **correct**. Since variable costs are constant across the relevant range, the total variable cost for September will be \$1,664,000 (260,000 units  $\times$  \$6.40). Since the normal production run is 50,000 units, and no indication is given that Tyler's machinery can handle a larger run, we can conclude that five batches were needed in August (220,000 units total production  $\div$  50,000 units per batch = 4.4 batches). The setup cost for a batch must therefore be \$176,000 (\$880,000  $\div$  5 setups). Six setups will be required for September (260,000 units total production  $\div$  50,000 units per batch = 5.2 batches), for a total of \$1,056,000 in setup costs (\$176,000  $\times$  6 setups). Fixed costs of \$1,210,000 are unchanging within the relevant range. Total budgeted production costs for September are therefore:

Variable costs	\$1,664,000
Batch set-up cost	1,056,000
Fixed costs	<u>1,210,000</u>
Total	<u><u>\$3,930,000</u></u>

- Answer (C) is **incorrect**. The amount of \$3,974,000 results from using only four batches in August and five batches in September.
- Answer (D) is **incorrect**. The amount of \$4,134,000 is based on the \$15.90 average total cost for the preceding month, which is irrelevant because both set-up costs and fixed costs per unit will change in September.

**[28] Gleim #: 6.6.98 -- Source: CMA 0408 2-042**

Ming Company has budgeted sales at 6,300 units for the next fiscal year and desires to have 590 good units on hand at the end of that year. Beginning inventory is 470 units. Ming has found from past experience that 10% of all units produced do not pass final inspection and therefore must be destroyed. How many units should Ming plan to produce in the next fiscal year?

- A. 6,890
- B. 7,062
- C. 7,133
- D. 7,186

- Answer (A) is **incorrect**. The figure 6,890 is simply the sum of projected sales and ending inventory without taking account of the 10% spoilage.
- Answer (B) is **incorrect**. The figure 7,062 results from merely adding the projected sales and end-of-year buffer and subtracting ending inventory and multiplying the result by 110%; the 110% does not apply to the 470 units in beginning inventory because that number is after the spoiled units were deducted in the previous period.
- Answer (C) is **correct**. Ming's required production for the year can be calculated as follows:

Projected sales	6,300
Add: projected ending inventory	590
Less: beginning inventory	<u>(470)</u>
Production	<u><u>6,420</u></u>

Since 10% of all units produced do not pass inspection, Ming must produce 7,133 units ( $6,420 \div 90\%$ ).

- Answer (D) is **incorrect**. The figure 7,186 results from dividing projected sales and projected ending inventory by 90% before calculating desired production.

**[29] Gleim #: 6.6.99 -- Source: CMA 0408 2-043**

Savior Corporation assembles backup tape drive systems for home microcomputers. For the first quarter, the budget for sales is 67,500 units. Savior will finish the fourth quarter of last year with an inventory of 3,500 units, of which 200 are obsolete. The target ending inventory is 10 days of sales (based upon 360 days). What is the budgeted production for the first quarter?

- A. 75,000
- B. 71,700
- C. 71,500
- D. 64,350

- Answer (A) is **incorrect**. The figure 75,000 results from ignoring the units available in beginning inventory.
- Answer (B) is **correct**. The 67,500 of sales for the quarter average 750 per day for 90 days. Thus, production for the quarter can be calculated as follows:

Budgeted sales	67,500
Add: required ending inventory ( $750 \times 10$ days)	<u>7,500</u>
Total units needed	75,000
Less: beginning inventory (3,500 – 200)	<u>(3,300)</u>
Budgeted production	<u><u>71,700</u></u>

- Answer (C) is **incorrect**. The figure 71,500 results from failing to subtract the obsolete units in beginning inventory.
- Answer (D) is **incorrect**. The figure 64,350 results from miscalculating the average sales per day.

[30] Gleim #: 6.6.100 -- Source: CMA 0408 2-045

Data regarding Rombo Company's budget are shown below.

Planned sales	4,000 units
Material cost	\$2.50 per pound
Direct labor	3 hours per unit
Direct labor rate	\$7 per hour
Finished goods beginning inventory	900 units
Finished goods ending inventory	600 units
Direct materials beginning inventory	4,300 units
Direct materials ending inventory	4,500 units
Materials used per unit	6 pounds

Rombo Company's production budget will show total units to be produced of

- A. 3,700
- B. 4,000
- C. 4,300
- D. 4,600

- Answer (A) is **correct**. Rombo's required production for the year can be calculated as follows:

Sales for year	4,000
Add: ending finished goods inventory	600
Less: beginning finished goods inventory	<u>(900)</u>
Required production	<u><u>3,700</u></u>

- Answer (B) is **incorrect**. This number represents the level of unit sales, not production, for the year.
- Answer (C) is **incorrect**. This number of units results from improperly adding beginning finished goods and subtracting ending finished goods.
- Answer (D) is **incorrect**. This number of units results from failing to subtract the beginning finished goods inventory.

**[31] Gleim #: 6.6.101 -- Source: CMA 0408 2-046**

Krouse Company is in the process of developing its operating budget for the coming year. Given below are selected data regarding the company's two products, laminated putter heads and forged putter heads, that are sold through specialty golf shops.

	Putter Heads	
	Forged	Laminated
Raw materials:		
Steel	2 lbs. @ \$5/lb.	1 lb. @ \$5/lb.
Copper	None	1 lb. @ \$15/lb.
Direct labor	1/4 hr. @ \$20/hr.	1 hr. @ \$22/hr.
Expected sales (units)	8,200	2,000
Selling price per unit	\$30	\$80
Ending inventory target (units)	100	60
Beginning inventory (units)	300	60
Beginning inventory (cost)	\$5,250	\$3,120

Manufacturing overhead is applied to units produced on the basis of direct labor hours. Variable manufacturing overhead is projected to be \$25,000, and fixed manufacturing overhead is expected to be \$15,000.

The estimated cost to produce one unit of the laminated putter head is

- A. \$42
- B. \$46
- C. \$52
- D. \$62

- Answer (A) is **incorrect**. The amount of \$42 results from failing to include overhead costs.
- Answer (B) is **incorrect**. The amount of \$46 results from including only fixed overhead costs.

- Answer (C) is **correct**. The costs of direct materials and direct labor are given. Determining per-unit overhead costs involves computing the total number of direct labor hours projected for the month (for both products).

	<u>Forged</u>	<u>Laminated</u>
Budgeted sales	8,200	2,000
Less: beginning inventory	(300)	(60)
Add: ending inventory target	<u>100</u>	<u>60</u>
Budgeted production	8,000	2,000
Times: DL hours	<u>× 0.25</u>	<u>× 1.00</u>
Budgeted DL hours	<u><u>2,000</u></u>	<u><u>2,000</u></u>

Total direct labor hours for the month are therefore 4,000 (2,000 + 2,000). Per-unit overhead costs can now be calculated:

Variable overhead costs	\$25,000
Fixed overhead costs	<u>15,000</u>
Total projected overhead	\$40,000
Divided by: DL hours	<u>÷ 4,000</u>
Per-unit overhead cost	<u><u>\$ 10.00</u></u>

Total per-unit cost for a laminated putter head can now be calculated as follows:

Direct materials -- steel	\$ 5
Direct materials -- copper	15
Direct labor	22
Manufacturing overhead	<u>10</u>
Total per-unit cost	<u><u>\$52</u></u>

- Answer (D) is **incorrect**. The amount of \$62 results from improperly assigning all fixed costs to the laminated units.

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**[Fact Pattern #9]**

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A partial schedule of cash collections for January through March of the coming year reveals the following receipts for the period:

	Cash Receipts		
	January	February	March
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000

Other information includes the following:

- Inventories are maintained at 30% of the following month's sales.
- Tidwell desires to keep a minimum cash balance of \$15,000. Total payments in January are expected to be \$106,500, which excludes \$12,000 of depreciation expense. Any required borrowings are in multiples of \$1,000.
- The December 31 balance sheet for the preceding year revealed a cash balance of \$24,900.

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**[32] Gleim #: 6.6.102 -- Source: CMA 0408 2-047**

(Refers to Fact Pattern #9)

March sales total \$150,000. The number of units Tidwell must purchase in February is

- A. 3,850
- B. 4,900
- C. 6,100
- D. 7,750

- Answer (A) is **incorrect**. The figure of 3,850 units results from failing to include 30% of March sales.
- Answer (B) is **incorrect**. The figure of 4,900 results from reversing the effects of beginning and ending inventory.

- Answer (C) is **correct**. Projected sales for February total \$110,000 (\$66,000 + \$44,000). Unit sales are thus expected to be 5,500 (\$110,000 ÷ \$20). March unit sales are projected at 7,500 (\$150,000 ÷ \$20). February purchases can thus be calculated as follows:

Needed for February sales	5,500
Add: 30% of March sales	<u>2,250</u>
Total units needed	7,750
Less: beginning inventory	<u>(1,650)</u>
February purchases	<u><u>6,100</u></u>

- Answer (D) is **incorrect**. The figure of 7,750 results from failing to subtract beginning inventory.

**[33] Gleim #: 6.6.103 -- Source: CMA 0408 2-076**

(Refers to Fact Pattern #9)

Ignoring income taxes, the financing Tidwell will need in January to maintain the firm's minimum cash balance is

- A. \$8,000
- B. \$10,600
- C. \$11,000
- D. \$23,000

- Answer (A) is **incorrect**. The ending cash balance is \$4,400.
- Answer (B) is **incorrect**. The figure \$10,600 is the actual amount of cash needed; loan must be in multiples of \$1,000.
- Answer (C) is **correct**. Tidwell's ending cash balance for January is calculated as follows:

Beginning balance of cash	\$ 24,900
Add: cash receipts	<u>86,000</u>
Cash available	\$110,900
Less: payments	<u>(106,500)</u>
Ending cash before borrowing	<u><u>\$ 4,400</u></u>

To reach the minimum acceptable cash balance of \$15,000, the company will need to borrow at least \$10,600. Since loans are in multiples of \$1,000, the borrowing must be rounded up to \$11,000.



- Answer (D) is **incorrect**. The amount of \$23,000 results from treating the non-cash depreciation expense as a cash payment.

**[35] Gleim #: 6.6.105 -- Source: CMA 0408 2-051**

Swan Company is a maker of men's slacks. The company would like to maintain 20,000 yards of fabric in ending inventory. The beginning fabric inventory is expected to contain 25,000 yards. The expected yards of fabric needed for sales is 90,000. Compute the yards of fabric that Swan needs to purchase.

- A. 85,000
- B. 90,000
- C. 95,000
- D. 135,000

- Answer (A) is **correct**. Swan's fabric purchase requirements can be calculated as follows:

Needed for sales	90,000
Add: ending inventory	20,000
Less: beginning inventory	<u>(25,000)</u>
Total purchases	<u>85,000</u>

- Answer (B) is **incorrect**. The figure of 90,000 yards is only the amount needed for current sales.
- Answer (C) is **incorrect**. The figure of 95,000 yards results from improperly subtracting ending inventory and adding beginning inventory.
- Answer (D) is **incorrect**. The figure of 135,000 yards results from improperly adding beginning inventory.

**[36] Gleim #: 6.6.106 -- Source: CMA 0408 2-052**

Manoli Gift Shop maintains a 35% gross profit percentage on sales and carries an ending inventory balance each month sufficient to support 30% of the next month's expected sales. Anticipated sales for the fourth quarter are as follows:

October	\$42,000
November	58,000
December	74,000

What amount of goods should Manoli Gift Shop plan to purchase during the month of November?

- A. \$40,820
- B. \$51,220
- C. \$52,130
- D. \$62,800

- Answer (A) is **correct**. Manoli's sales and ending inventory requirements at cost can be calculated as follows:

	Projected Sales		Cost %		Sales At Cost
October:	\$42,000	×	65%	=	\$27,300
November:	58,000	×	65%	=	37,700
December:	74,000	×	65%	=	48,100

November's purchase requirements can now be determined:

Needed for sales	\$37,700
Add: required ending inventory (\$48,100 × 30%)	14,430
Less: projected beginning inventory (\$37,700 × 30%)	<u>(11,310)</u>
Total purchases	<u><u>\$40,820</u></u>

- Answer (B) is **incorrect**. The amount of \$51,220 is based on selling prices instead of cost.
- Answer (C) is **incorrect**. The amount of \$52,130 results from failing to deduct the inventory already on hand.
- Answer (D) is **incorrect**. The amount of \$62,800 is based on selling prices instead of cost.

**[37] Gleim #: 6.6.107 -- Source: CMA 0408 2-053**

In preparing the direct material purchases budget for next quarter, the plant controller has the following information available:

Budgeted unit sales	2,000
Pounds of materials per unit	4
Cost of materials per pound	\$3
Pounds of materials on hand	400
Finished units on hand	250
Target ending units inventory	325
Target ending inventory of pounds of materials	800

How many pounds of materials must be purchased?

- A. 2,475
- B. 7,900
- C. 8,700
- D. 9,300

- Answer (A) is **incorrect**. The figure of 2,475 results from using unit sales rather than pounds of raw material.
- Answer (B) is **incorrect**. The figure of 7,900 results from failing to account for the 800 pounds of target ending raw materials inventory.
- Answer (C) is **correct**. The calculation of pounds of raw material needed to be purchased is as follows:

Budgeted unit sales	2,000
Add: required finished goods ending inventory	325
Less: beginning finished goods inventory	<u>(250)</u>
Required production	2,075
Times: pounds per unit	<u>× 4</u>
Pounds required for production	8,300
Add: target ending raw materials inventory	800
Less: beginning raw materials inventory	<u>(400)</u>
Pounds to be purchased	<u><u>8,700</u></u>

- Answer (D) is **incorrect**. The figure of 9,300 results from reversing the finished goods beginning and ending inventories.

**[38] Gleim #: 6.6.108 -- Source: CMA 0408 2-054**

Playtime Toys estimates that it will sell 200,000 dolls during the coming year. The beginning inventory is 12,000 dolls; the target ending inventory is 15,000 dolls. Each doll requires two shoes, which are purchased from an outside supplier. The beginning inventory of shoes is 20,000; the target ending inventory is 18,000 shoes. The number of shoes that should be purchased during the year is

- A. 396,000
- B. 398,000
- C. 402,000
- D. 404,000

- Answer (A) is **incorrect**. The figure of 396,000 is based on sales instead of production.
- Answer (B) is **incorrect**. The figure of 398,000 fails to include the beginning and target ending inventories of shoes already on dolls.
- Answer (C) is **incorrect**. The figure of 402,000 is based on sales instead of production.
- Answer (D) is **correct**. The calculation of the number of shoes that must be purchased is as follows:

Shoes needed for dolls to be sold	400,000
Less: beginning inventory of shoes on dolls	(24,000)
Add: target ending inventory of shoes on dolls	30,000
Less: beginning inventory of shoes	(20,000)
Add: target ending inventory of shoes	<u>18,000</u>
Shoes to be purchased	<u><u>404,000</u></u>

**[39] Gleim #: 6.6.109 -- Source: CMA 0408 2-055**

Maker Distributors has a policy of maintaining inventory at 15% of the next month's forecast sales. The cost of Maker's merchandise averages 60% of the selling price. The inventory balance as of May 31 is \$63,000, and the forecast dollar sales for the last seven months of the year are as follows:

June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

What is the budgeted dollar amount of Maker's purchases for July?

- A. \$355,500
- B. \$360,000
- C. \$364,500
- D. \$399,000

- Answer (A) is **incorrect**. The amount of \$355,500 results from adding beginning inventory and subtracting ending inventory.
- Answer (B) is **incorrect**. The amount of \$360,000 is July sales at cost without adjustment for beginning and ending inventories.

- Answer (C) is **correct**. Maker's budgeted purchases for July are calculated as follows:

Projected sales at retail		\$600,000
Times: cost percentage	× 60%	
Projected sales at cost:		\$360,000
Projected sales at cost	\$360,000	
Target percentage	× 15%	
Less: 15% of estimated sales		(54,000)
Following month projected sales	\$650,000	
Cost percentage	× 60%	
Following month sales at cost	\$390,000	
Target percentage	× 15%	
Add: 15% of following month sales		58,500
Projected purchases at cost		<u>\$364,500</u>

- Answer (D) is **incorrect**. The amount of \$399,000 is not budgeted dollar purchases for July.

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**[Fact Pattern #10]**

Rokat Corporation is a manufacturer of tables sold to schools, restaurants, hotels, and other institutions. The table tops are manufactured by Rokat, but the table legs are purchased from an outside supplier. The Assembly Department takes a manufactured table top and attaches the four purchased table legs. It takes 20 minutes of labor to assemble a table. The company follows a policy of producing enough tables to ensure that 40% of next month's sales are in the finished goods inventory. Rokat also purchases sufficient direct materials inventory to ensure that direct materials inventory is 60% of the following month's scheduled production.

Rokat's sales budget in units for the next quarter is as follows:

July	2,300
August	2,500
September	2,100

Rokat's ending inventories in units for June 30 are

Finished goods	1,900
Direct materials (legs)	4,000

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**[43] Gleim #: 6.6.113 -- Source: CMA 695 3-14**

(Refers to Fact Pattern #10)

The number of tables to be produced by Roket during August is

- A. 1,400 tables.
- B. 2,340 tables.
- C. 1,440 tables.
- D. 1,900 tables.

- Answer (A) is **incorrect**. The number of tables to be produced in July is 1,400.
- Answer (B) is **correct**. The company will need 2,500 finished units for August sales. In addition, 840 units ( $2,100 \text{ September unit sales} \times 40\%$ ) should be in inventory at the end of August. August sales plus the desired ending inventory equals 3,340 units. Of these units, 40% of August's sales, or 1,000 units, should be available from beginning inventory. Consequently, production in August should be 2,340 units.
- Answer (C) is **incorrect**. The figure of 1,440 tables is based on July's beginning inventory.
- Answer (D) is **incorrect**. July's beginning inventory equals 1,900 tables.

**[44] Gleim #: 6.6.114 -- Source: CMA 695 3-15**

(Refers to Fact Pattern #10)

Assume Roket's required production for August and September is 1,600 and 1,800 units, respectively, and the July 31 direct materials inventory is 4,200 units. The number of table legs to be purchased in August is

- A. 6,520 legs.
- B. 9,400 legs.
- C. 2,200 legs.
- D. 6,400 legs.

- Answer (A) is **correct**. The August production of 1,600 units will require 6,400 table legs. September's production of 1,800 units will require 7,200 table legs. Thus, inventory at the end of August should be 4,320 legs ( $7,200 \text{ legs} \times 60\%$ ). The total of legs needed during August is 10,720 ( $6,400 + 4,320$ ), of which 4,200 are available from the July 31 ending inventory. The remaining 6,520 legs must be purchased during August.
- Answer (B) is **incorrect**. The figure of 9,400 legs is based on an ending inventory of 100% of September's production.
- Answer (C) is **incorrect**. Failing to consider the legs needed for the ending inventory results in 2,200 legs.

- Answer (D) is **incorrect**. The amount needed for August production is 6,400 legs.



[1] Gleim #: 6.7.115 -- Source: CMA 697 3-17

Which one of the following statements regarding selling and administrative budgets is most accurate?

- A. Selling and administrative budgets are usually optional.
  - B. Selling and administrative budgets are fixed in nature.
  - C. Selling and administrative budgets are difficult to allocate by month and are best presented as one number for the entire year.
  - D. Selling and administrative budgets need to be detailed in order that the key assumptions can be better understood.
- Answer (A) is **incorrect**. Selling and administrative budgets are no more optional than any other component of the master budget.
  - Answer (B) is **incorrect**. Selling and administrative budgets have both variable and fixed components.
  - Answer (C) is **incorrect**. Selling and administrative budgets should be prepared on the same basis as the remainder of the budget, typically on at least a monthly basis.
  - Answer (D) is **correct**. Sales and administrative budgets are prepared after the sales budget. Like the other budgets, they constitute prospective information based on the preparer's assumptions about conditions expected to exist and actions expected to be taken.

[2] Gleim #: 6.7.116 -- Source: CMA 696 3-7

For the month of December, Crystal Clear Bottling expects to sell 12,500 cases of Cranberry Sparkling Water at \$24.80 per case and 33,100 cases of Lemon Dream Cola at \$32.00 per case. Sales personnel receive 6% commission on each case of Cranberry Sparkling Water and 8% commission on each case of Lemon Dream Cola. In order to receive a commission on a product, the sales personnel team must meet the individual product revenue quota. The sales quota for Cranberry Sparkling Water is \$500,000, and the sales quota for Lemon Dream Cola is \$1,000,000. The sales commission that should be budgeted for December is

- A. \$4,736
  - B. \$82,152
  - C. \$84,736
  - D. \$103,336
- Answer (A) is **incorrect**. The commission on \$59,200 of Lemon sales is \$4,736.

- Answer (B) is **incorrect**. The amount of \$82,152 equals 6% of all sales.
- Answer (C) is **correct**. The sale of 12,500 cases of Cranberry at \$24.80 per case produces revenue of \$310,000, an amount that does not qualify for commissions. The sale of 33,100 cases of Lemon at \$32 per case produces revenue of \$1,059,200. This amount is greater than the minimum and therefore qualifies for a commission of \$84,736 ( $\$1,059,200 \times 8\%$ ). This calculation assumes that commissions are paid on all sales if the revenue quota is met.
- Answer (D) is **incorrect**. The amount of \$103,336 assumes that a commission of \$18,600 is paid on Cranberry.

**[3] Gleim #: 6.7.117 -- Source: Publisher**

Harvin Co. pays out sales commissions to its sales team in the month the company receives cash for payment. These commissions equal 5% of total (monthly) cash inflows as a result of sales. Harvin has budgeted sales of \$300,000 for August, \$400,000 for September, and \$200,000 for October. Approximately half of all sales are on credit, and the other half are cash sales. Experience indicates that 70% of the budgeted credit sales will be collected in the month following the sale, 20% the month after that, and 10% of the sales will be uncollectible. Based on this information, what should be the total amount of sales commissions paid out by Harvin in the month of October?

- A. \$8,500
- B. \$13,500
- C. \$17,000
- D. \$22,000

- Answer (A) is **incorrect**. Failure to consider the cash sales made during October results in \$8,500.
- Answer (B) is **correct**. Cash sales for Harvin for the month of October are budgeted at \$100,000 (half of \$200,000 overall sales). Projections for collections of credit sales in August indicate that 20% will be cash inflows in October, or  $(\$150,000 \times 20\%) = \$30,000$ . Projections for collections of credit sales in September indicate that 70% will be cash inflows in October, or  $(\$200,000 \times 70\%) = \$140,000$ . Therefore, total cash inflows projected for the month of October equal  $\$100,000 + \$30,000 + \$140,000 = \$270,000$ . Because sales commissions are set at 5% of monthly cash inflows, the sales commissions for October equal  $(\$270,000 \times 5\%) = \$13,500$ .
- Answer (C) is **incorrect**. The amount of \$17,000 is based on total sales for August and September rather than credit sales.
- Answer (D) is **incorrect**. Using total sales rather than credit sales results in \$22,000.

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**[Fact Pattern #1]**

Rokat Corporation is a manufacturer of tables sold to schools, restaurants, hotels, and other institutions. The table tops are manufactured by Rokat, but the table legs are purchased from an outside supplier. The Assembly Department takes a manufactured table top and attaches the four purchased table legs. It takes 20 minutes of labor to assemble a table. The company follows a policy of producing enough tables to ensure that 40% of next month's sales are in the finished goods inventory. Rokat also purchases sufficient direct materials inventory to ensure that direct materials inventory is 60% of the following month's scheduled production.

Rokat's sales budget in units for the next quarter is as follows:

July	2,300
August	2,500
September	2,100

Rokat's ending inventories in units for June 30 are

Finished goods	1,900
Direct materials (legs)	4,000

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**[5] Gleim #: 6.7.119 -- Source: CMA 695 3-16**

(Refers to Fact Pattern #1)

Assume that Rokat Corporation will produce 1,800 units in the month of September. How many employees will be required for the Assembly Department? (Fractional employees are acceptable since employees can be hired on a part-time basis. Assume a 40-hour week and a 4-week month.)

- A. 15 employees.
- B. 3.75 employees.
- C. 60 employees.
- D. 600 employees.

- Answer (A) is **incorrect**. This number of employees assumes production occurs in a single 40-hour week.
- Answer (B) is **correct**. Each unit requires 20 minutes of assembly time, or 1/3 of an hour. The assembly of 1,800 units will therefore require 600 hours of labor ( $1,800 \times 1/3$ ). At 40 hours per week for 4 weeks, each employee will work 160 hours during the month. Thus, 3.75 employees ( $600 \div 160$ ) are needed.

- Answer (C) is **incorrect**. This number of employees assumes that each leg requires 20 minutes to assemble and that production occurs in a single 40-hour week.
- Answer (D) is **incorrect**. This number of employees is the number of hours needed, not the number of employees.

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**[Fact Pattern #2]**

Jordan Auto has developed the following production plan:

<u>Month</u>	<u>Units</u>
January	10,000
February	8,000
March	9,000
April	12,000

Each unit contains 3 pounds of direct materials. The desired direct materials ending inventory each month is 120% of the next month's production, plus 500 pounds. (The beginning inventory meets this requirement.) Jordan has developed the following direct labor standards for production of these units:

	<u>Department 1</u>	<u>Department 2</u>
Hours per unit	2.0	0.5
Hourly rate	\$7.25	\$12.00

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**[6] Gleim #: 6.7.120 -- Source: CMA 697 3-15**

(Refers to Fact Pattern #2)

Jordan Auto's total budgeted direct labor dollars for February usage should be

- A. \$164,000
- B. \$174,250
- C. \$184,500
- D. \$221,400

- Answer (A) is **correct**. The standard unit labor cost is \$20.50 [(\$7.25 × 2 hours in Department 1) + (\$12 × .5 hour in Department 2)], so the total budgeted direct labor dollars for February equal \$164,000 (8,000 units × \$20.50).
- Answer (B) is **incorrect**. The amount of \$174,250 is for 500 more units than budgeted usage.
- Answer (C) is **incorrect**. The amount for March is \$184,500.
- Answer (D) is **incorrect**. The amount of \$221,400 is for 120% of budgeted March production.

**[7] Gleim #: 6.7.121 -- Source: CMA 684 4-26**

Each unit of Product XK-46 requires three direct labor hours. Employee benefit costs are treated as direct labor costs. Data on direct labor are

Number of direct employees	25
Weekly productive hours per employee	35
Estimated weekly wages per employee	\$245
Employee benefits (related to weekly wages)	25%

The standard direct labor cost per unit of Product XK-46 is

- A. \$21.00
- B. \$26.25
- C. \$29.40
- D. \$36.75

- Answer (A) is **incorrect**. The amount of \$21.00 excludes employee benefits.
- Answer (B) is **correct**. The standard direct labor unit cost equals 3 hours times the cost per DLH. This amount is determined by adding employee benefits to weekly wages and dividing by hours per week.

Weekly wages	\$245.00
Add: benefits ( $\$245 \times .25$ )	<u>61.25</u>
Weekly total compensation	\$306.25
Divided by: hours/week	<u><math>\div</math> 35</u>
Cost per DL hour	\$ 8.75
Times: DL hours per unit	<u><math>\times</math> 3</u>
Unit DL cost	<u><u>\$ 26.25</u></u>

- Answer (C) is **incorrect**. Using employee benefits as 40%, not 25%, of weekly wages results in \$29.40.
- Answer (D) is **incorrect**. Dividing weekly wages plus benefits by 25 employees instead of 35 weekly productive hours per employee results in \$36.75.

**[8] Gleim #: 6.7.122 -- Source: Publisher**

For the month of June, Wilder Cherry Company expects to sell 12,500 cases of small cherries at \$25 per case and 33,000 cases of large cherries at \$32 per case. Sales personnel receive a 6% commission on each case of small cherries and an 8% commission on each case of large cherries. To receive a commission on a product, the sales personnel team must meet the individual product revenue quota. The sales quotas for small cherries and large cherries are \$500,000 and \$1 million, respectively. What are the sales commissions budgeted for June?

- A. \$109,440
- B. \$84,480
- C. \$82,110
- D. \$4,480

- Answer (A) is **incorrect**. The amount of \$109,440 assumes that an 8% commission was paid on all sales.
- Answer (B) is **correct**. The sale of 12,500 cases of small cherries at \$25 per case produces revenue of \$312,500. Because this amount is below the \$500,000 minimum, no commissions should be budgeted for small cherries. The sale of 33,000 cases of large cherries at \$32 per case produces revenue of \$1,056,000. This amount is greater than the \$1 million minimum and therefore qualifies for a commission of \$84,480 ( $\$1,056,000 \times 8\%$ ). The problem did not state that a commission would be paid only on amounts exceeding the minimum. Hence, all sales qualify once the minimum is reached.
- Answer (C) is **incorrect**. The amount of \$82,110 is based on a 6% commission on all sales.
- Answer (D) is **incorrect**. The commission on the \$56,000 of large cherries sales in excess of the minimum is \$4,480.

**[19] Gleim #: 6.7.133 -- Source: CMA 0408 2-049**

Peterson's Planters, Inc., budgeted the following amounts for the coming year:

Beginning inventory, finished goods	\$ 10,000
Cost of goods sold	400,000
Direct material used in production	100,000
Ending inventory, finished goods	25,000
Beginning and ending work-in-process inventory	0

Overhead is estimated to be two times the amount of direct labor dollars. The amount that should be budgeted for direct labor for the coming year is

- A. \$315,000
- B. \$210,000
- C. \$157,500
- D. \$105,000

- Answer (A) is **incorrect**. The amount of \$315,000 is labor plus overhead.
- Answer (B) is **incorrect**. The amount of \$210,000 is overhead.
- Answer (C) is **incorrect**. The amount of \$157,500 results from treating overhead as equal to labor.
- Answer (D) is **correct**. Peterson's cost of goods manufactured can be calculated as follows:

Cost of goods sold	\$400,000
Add: ending finished goods inventory	<u>25,000</u>
Goods available for sale	\$425,000
Less: beg. finished goods inventory	<u>(10,000)</u>
Cost of goods manufactured	<u><u>\$415,000</u></u>

The \$415,000 is composed of materials (\$100,000), direct labor, and overhead. Therefore, labor plus overhead equals \$315,000. Since overhead is two times labor, the calculation would be  $DL + 2DL = \$315,000$ , or  $DL = \$105,000$ .

**[20] Gleim #: 6.7.134 -- Source: CMA 0408 2-056**

The pro forma statement of employee benefit costs, a budget schedule that is prepared as part of an organization's annual profit plan, would include costs related to

- A. Employees' gross wages and salaries and the related company-paid benefits.
- B. Employees' net wages and salaries and the related company-paid benefits.
- C. All payroll-related deductions withheld from employees and company-paid benefits.
- D. Company-paid benefits and company-paid payroll taxes.

- Answer (A) is **incorrect**. Employees' gross wages are included in the direct labor budget.
- Answer (B) is **incorrect**. Employees' net wages are included in the direct labor budget.
- Answer (C) is **incorrect**. Payroll deductions withheld are forwarded to the federal government; they are not expenses of the firm.
- Answer (D) is **correct**. The pro forma statement of employee benefit costs reports those personnel-related costs that are not included in direct labor, i.e., company-paid benefits and company-paid payroll taxes.

**[21] Gleim #: 6.7.135 -- Source: CMA 0408 2-057**

A company that manufactures furniture is establishing its budget for the upcoming year. All of the following items would appear in the overhead budget **except** for the

- A. Overtime paid to the workers who perform production scheduling.
- B. Cost of glue used to secure the attachment of the legs to the tables.
- C. Fringe benefits paid to the production supervisor.
- D. Freight charges paid for the delivery of raw materials to the company.

- Answer (A) is **incorrect**. Wages paid to production scheduling personnel are a component of indirect labor.
- Answer (B) is **incorrect**. Glue is treated as an indirect material.
- Answer (C) is **incorrect**. Fringe benefits paid to the production supervisor are a component of indirect labor.
- Answer (D) is **correct**. Freight charges for raw materials delivery are included in the costs of direct materials.



**[22] Gleim #: 6.7.136 -- Source: CMA 0408 2-059**

All of the following would appear on a projected schedule of cost of goods manufactured **except** for

- A. Ending work-in-process inventory.
- B. Beginning finished goods inventory.
- C. The cost of raw materials used.
- D. Applied manufacturing overhead.

- Answer (A) is **incorrect**. Ending work-in-process inventory is a component of cost of goods manufactured.
- Answer (B) is **correct**. Beginning finished goods inventory is a component of cost of goods sold, not cost of goods manufactured.
- Answer (C) is **incorrect**. Raw materials, whether they are consumed as direct or indirect materials, are a component of cost of goods manufactured.
- Answer (D) is **incorrect**. Manufacturing overhead is a component of cost of goods manufactured.

**[23] Gleim #: 6.7.137 -- Source: CMA 0408 2-061**

Tut Company's selling and administrative costs for the month of August, when it sold 20,000 units, were as follows.

	Costs	
	Per Unit	Total
Variable costs	\$18.60	\$372,000
Step costs	4.25	85,000
Fixed costs	8.80	176,000
Total selling and administrative costs	<u>\$31.65</u>	<u>\$633,000</u>

The variable costs represent sales commissions paid at the rate of 6.2% of sales. The step costs depend on the number of salespersons employed by the company. In August there were 17 persons on the sales force. However, two members have taken early retirement effective August 31. It is anticipated that these positions will remain vacant for several months. Total fixed costs are unchanged within a relevant range of 15,000 to 30,000 units per month. Tut is planning a sales price cut of 10%, which it expects will increase sales volume to 24,000 units per month. If Tut implements the sales price reduction, the total budgeted selling and administrative costs for the month of September would be

- A. \$652,760
- B. \$679,760
- C. \$714,960
- D. \$759,600

- Answer (A) is **correct**. If the \$372,000 of variable cost is 6.2% of sales, then sales were \$6,000,000. Current unit price must be \$300 (\$6,000,000 total sales ÷ 20,000 units). A 10% price cut will lower it to \$270 (\$300 × 90%), leading to total projected sales after the price cut of \$6,480,000 (24,000 × \$270). The sales commissions on that level of sales will be \$401,760 (\$6,480,000 × 6.2%). Because two salespersons will be gone in September, the step costs will be reduced to \$75,000 [\$85,000 × (15 ÷ 17)]. Fixed costs remain at \$176,000. Total anticipated S&A costs for September are therefore \$652,760 (\$401,760 + \$75,000 + \$176,000).
- Answer (B) is **incorrect**. The amount of \$679,760 results from adding two salespersons instead of subtracting them.
- Answer (C) is **incorrect**. The amount of \$714,960 is based on the old unit figures for step costs and overhead.
- Answer (D) is **incorrect**. The amount of \$759,600 is based on the unit cost for August without considering any of the proposed changes.



**[1] Gleim #: 6.8.138 -- Source: CMA 695 3-17**

Which one of the following is the best characteristic concerning the capital budget? The capital budget is a(n)

- A. Plan to ensure that there are sufficient funds available for the operating needs of the company.
  - B. Exercise that sets the long-range goals of the company including the consideration of external influences caused by others in the market.
  - C. Plan that results in the cash requirements during the operating cycle.
  - D. Plan that assesses the long-term needs of the company for plant and equipment purchases.
- Answer (A) is **incorrect**. Capital budgeting involves long-term investment needs, not immediate operating needs.
  - Answer (B) is **incorrect**. Establishing long-term goals in the context of relevant factors in the firm's environment is strategic planning.
  - Answer (C) is **incorrect**. Cash budgeting determines operating cash flows. Capital budgeting evaluates the rate of return on specific investment alternatives.
  - Answer (D) is **correct**. Capital budgeting is the process of planning expenditures for long-lived assets. It involves choosing among investment proposals using a ranking procedure. Evaluations are based on various measures involving the rate of ROI.

**[2] Gleim #: 6.8.139 -- Source: CMA 1296 3-20**

Which one of the following items would have to be included for a company preparing a schedule of cash receipts and disbursements for calendar Year 1?

- A. A purchase order issued in December Year 1 for items to be delivered in February Year 2.
  - B. Dividends declared in November Year 1 to be paid in January Year 2 to shareholders of record as of December Year 1.
  - C. The amount of uncollectible customer accounts for Year 1.
  - D. The borrowing of funds from a bank on a note payable taken out in June Year 1 with an agreement to pay the principal and interest in June Year 2.
- Answer (A) is **incorrect**. The cash disbursement presumably will not occur until Year 2.
  - Answer (B) is **incorrect**. The cash flow will not occur until dividends are paid in Year 2.
  - Answer (C) is **incorrect**. Bad debt expense is a noncash item.

- Answer (D) is **correct**. A schedule of cash receipts and disbursements (cash budget) should include all cash inflows and outflows during the period without regard to the accrual accounting treatment of the transactions. Hence, it should include all checks written and all sources of cash, including borrowings. A borrowing from a bank in June Year 1 should appear as a cash receipt for Year 1.

**[3] Gleim #: 6.8.140 -- Source: CMA 691 3-4**

DeBerg Company has developed the following sales projections for the calendar year.

May	\$100,000
June	120,000
July	140,000
August	160,000
September	150,000
October	130,000

Normal cash collection experience has been that 50% of sales are collected during the month of sale and 45% in the month following sale. The remaining 5% of sales is never collected. DeBerg's budgeted cash collections for the third calendar quarter are

- A. \$427,500
- B. \$422,500
- C. \$414,000
- D. \$450,000

- Answer (A) is **incorrect**. The total cash expected to be collected from third calendar quarter sales is \$427,500.
- Answer (B) is **incorrect**. The budgeted cash collections for August through October, not the third calendar quarter, is \$422,500.
- Answer (C) is **correct**. If 50% of sales are collected in the month of sale and 45% in the next month, with the balance uncollectible, collections during the third quarter will be based on sales during June, July, August, and September. As calculated below, total budgeted collections are \$414,000.

June:	$\$120,000 \times 45\%$	=	\$ 54,000
July:	$140,000 \times (50\% + 45\%)$	=	133,000
August:	$160,000 \times (50\% + 45\%)$	=	152,000
September:	$150,000 \times 50\%$	=	<u>75,000</u>
Total			<u><u>\$414,000</u></u>

- Answer (D) is **incorrect**. The total budgeted sales for the third calendar quarter is \$450,000.

**[4] Gleim #: 6.8.141 -- Source: CMA 696 3-6**

The cash receipts budget includes

- A. Funded depreciation.
- B. Operating supplies.
- C. Extinguishment of debt.
- D. Loan proceeds.

- Answer (A) is **incorrect**. Funded depreciation involves cash outlays.
- Answer (B) is **incorrect**. Purchases of supplies involves cash outlays.
- Answer (C) is **incorrect**. The extinguishment of debt involves cash outlays.
- Answer (D) is **correct**. A cash budget may be prepared monthly or even weekly to facilitate cash planning and control. The purpose is to anticipate cash needs while minimizing the amount of idle cash. The cash receipts section of the budget includes all sources of cash. One such source is the proceeds of loans.

**[5] Gleim #: 6.8.142 -- Source: CMA 696 3-9**

Trumbull Company budgeted sales on account of \$120,000 for July, \$211,000 for August, and \$198,000 for September. Collection experience indicates that 60% of the budgeted sales will be collected the month after the sale, 36% will be collected the second month, and 4% will be uncollectible. The cash receipts from accounts receivable that should be budgeted for September would be

- A. \$169,800
- B. \$147,960
- C. \$197,880
- D. \$194,760

- Answer (A) is **correct**. The budgeted cash collections for September are \$169,800  $[(\$120,000 \text{ July sales} \times 36\%) + (\$211,000 \text{ August sales} \times 60\%)]$ .
- Answer (B) is **incorrect**. Reversing the percentages for July and August results in \$147,960.
- Answer (C) is **incorrect**. Using the wrong months (August and September) and reversing the percentages results in \$197,880.

- Answer (D) is **incorrect**. The amount of \$194,760 assumes collections were for August and September.

**[6] Gleim #: 6.8.143 -- Source: CMA 696 3-8**

The cash budget must be prepared before completing the

- A. Capital expenditure budget.
- B. Sales budget.
- C. Forecasted balance sheet.
- D. Production budget.

- Answer (A) is **incorrect**. The capital expenditure budget is an input necessary for the preparation of a cash budget.
- Answer (B) is **incorrect**. The sales budget is usually the first budget prepared.
- Answer (C) is **correct**. The pro forma balance sheet is the balance sheet for the beginning of the period updated for projected changes in cash, receivables, inventories, payables, etc. Accordingly, it cannot be prepared until after the cash budget is completed because cash is a current asset reported on the balance sheet.
- Answer (D) is **incorrect**. A production budget is normally prepared before the cash budget is started.

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**[Fact Pattern #1]**

Historically, Pine Hill Wood Products has had no significant bad debt experience with its customers. Cash sales have accounted for 10% of total sales, and payments for credit sales have been received as follows:

40% of credit sales in the month of the sale  
30% of credit sales in the first subsequent month  
25% of credit sales in the second subsequent month  
5% of credit sales in the third subsequent month

The forecast for both cash and credit sales is as follows:

<u>Month</u>	<u>Sales</u>
January	\$95,000
February	65,000
March	70,000
April	80,000
May	85,000

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**[7] Gleim #: 6.8.144 -- Source: CMA 697 3-18**

(Refers to Fact Pattern #1)

What is the forecasted cash inflow for Pine Hill Wood Products for May?

- A. \$70,875
- B. \$76,500
- C. \$79,375
- D. \$83,650

- Answer (A) is **incorrect**. The amount of \$70,875 omits May cash sales.
- Answer (B) is **incorrect**. May credit sales equals \$76,500.
- Answer (C) is **correct**. The cash inflows for May will come from May cash sales of \$8,500 ( $\$85,000 \times 10\%$ ), May credit sales of \$30,600 ( $\$85,000 \times 90\% \times 40\%$ ), April sales of \$21,600 ( $\$80,000 \times 30\% \times 90\%$ ), March sales of \$15,750 ( $\$70,000 \times 25\% \times 90\%$ ), and February sales of \$2,925 ( $\$65,000 \times 5\% \times 90\%$ ). The total is \$79,375.
- Answer (D) is **incorrect**. The amount of \$83,650 includes 5% of January's credit sales.



**[8] Gleim #: 6.8.145 -- Source: CMA 697 3-19**

(Refers to Fact Pattern #1)

Due to deteriorating economic conditions, Pine Hill Wood Products has now decided that its cash forecast should include a bad debt adjustment of 2% of credit sales, beginning with sales for the month of April. The 5% collection in the fourth month should be reduced to reflect the bad debt. Because of this policy change, the total expected cash inflow in April related to sales made in April will

- A. Be unchanged.
- B. Decrease by \$1,260.00.
- C. Decrease by \$1,440.00.
- D. Decrease by \$1,530.00.

- Answer (A) is **correct**. The estimated collections in July related to April credit sales will be reduced by \$1,440. Estimated collections in the month of the sale will be unchanged.
- Answer (B) is **incorrect**. The amount of \$1,260 is 2% of March credit sales.
- Answer (C) is **incorrect**. The collections in July related to April credit sales will be reduced by \$1,440.
- Answer (D) is **incorrect**. The amount of \$1,530 is 2% of May credit sales.

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**[Fact Pattern #2]**

Birch Corporation has the following historical pattern on its credit sales:

- 70% collected in month of sale
- 15% collected in the first month after sale
- 10% collected in the second month after sale
- 4% collected in the third month after sale
- 1% uncollectible

The sales on open account have been budgeted for the first 6 months of the year as follows:

January	\$ 70,000
February	90,000
March	100,000
April	120,000
May	100,000
June	90,000

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**[9] Gleim #: 6.8.146 -- Source: CMA 1289 4-24**

(Refers to Fact Pattern #2)

Birch's estimated total cash collections during April from accounts receivable are

- A. \$84,000
- B. \$110,800
- C. \$118,800
- D. \$108,000

- Answer (A) is **incorrect**. Estimated collections from April sales only equals \$84,000.
- Answer (B) is **correct**. The estimated April collections are \$110,800.

70% of April sales of \$120,000	=	\$ 84,000
15% of March sales of \$100,000	=	15,000
10% of February sales of \$90,000	=	9,000
4% of January sales of \$70,000	=	<u>2,800</u>
Total collections		<u><u>\$110,800</u></u>

- Answer (C) is **incorrect**. The amount of \$118,800 is 99% of April sales.

- Answer (D) is **incorrect**. The amount of \$108,000 does not include the estimated collections in April from January sales.

**[10] Gleim #: 6.8.147 -- Source: CMA 1289 4-25**

(Refers to Fact Pattern #2)

Birch's estimated total cash collections during the second calendar quarter from sales made on open account during the second calendar quarter are

- A. \$262,000
- B. \$288,800
- C. \$306,900
- D. \$310,000

- Answer (A) is **correct**. The second calendar quarter consists of April, May, and June. For April's sales of \$120,000, collections should be 95% (70% + 15% + 10%), or \$114,000. For May's sales of \$100,000, collections should be 85% (70% + 15%), or \$85,000. For June's sales of \$90,000, collections should be 70%, or \$63,000. The quarterly total is \$262,000 (\$114,000 + \$85,000 + \$63,000).
- Answer (B) is **incorrect**. The amount of \$288,800 includes cash collections from sales made during the first calendar quarter.
- Answer (C) is **incorrect**. The amount of \$306,900 is 99% of the total sales made during the second calendar quarter. It is the amount estimated to be collected during the calendar year, not just the second quarter.
- Answer (D) is **incorrect**. The total sales budgeted for the second calendar year is \$310,000.

**[16] Gleim #: 6.8.153 -- Source: CMA 693 3-10**

A firm develops an annual cash budget in order to

- A. Support the preparation of its cash flow statement for the annual report.
  - B. Ascertain which capital expenditure projects are feasible and which capital expenditure projects should be deferred.
  - C. Determine the opportunity costs of alternative sales and production strategies.
  - D. Avoid the opportunity costs of noninvested excess cash and minimize the cost of interim financing.
- Answer (A) is **incorrect**. The cash flow statement is based on actual results, not budgeted figures.

- Answer (B) is **incorrect**. A cash budget may facilitate decisions regarding deferral of capital projects; the budget does not ascertain which projects are feasible. The budget provides the total liquidity available for projects.
- Answer (C) is **incorrect**. Cash budgets do not determine opportunity costs.
- Answer (D) is **correct**. The cash budget is perhaps the most important part of a company's budget program. A cash budget facilitates planning for loans and other financing. Conversely, a firm should plan how to invest temporary surpluses of cash. A cash budget is particularly valuable in seasonal businesses in which a few months of revenues must be matched with 12 months of costs. Because a temporary shortage of cash may drive an otherwise financially sound organization into bankruptcy, proper planning can prevent financial embarrassment.

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**[Fact Pattern #3]**

Super Drive, a computer disk storage and back-up company, uses accrual accounting. The company's Statement of Financial Position for the year ended November 30 is as follows:

Super Drive  
Statement of Financial Position  
as of November 30

Assets		Liabilities and Stockholders' Equity	
Cash	\$ 52,000	Accounts payable	\$ 175,000
Accounts receivable, net	150,000	Common stock	900,000
Inventory	315,000	Retained earnings	<u>442,000</u>
Property, plant, and equipment	<u>1,000,000</u>	Total liabilities and	
Total assets	<u><u>\$1,517,000</u></u>	stockholders' equity	<u><u>\$1,517,000</u></u>

Additional information regarding Super Drive's operations include the following:

- Sales are budgeted at \$520,000 for December and \$500,000 for January of the next year.
  - Collections are expected to be 60% in the month of sale and 40% in the month following the sale.
  - Eighty percent of the disk drive components are purchased in the month prior to the month of sale, and 20% are purchased in the month of sale. Purchased components are 40% of the cost of goods sold.
  - Payment for the components is made in the month following the purchase.
  - Cost of goods sold is 80% of sales.
-

[19] Gleim #: 6.8.156 -- Source: CMA 1294 3-7

(Refers to Fact Pattern #3)

Super Drive's budgeted cash collections for the month of December are

- A. \$208,000
- B. \$520,000
- C. \$402,000
- D. \$462,000

- Answer (A) is **incorrect**. The amount of \$208,000 equals 40% of December sales.
- Answer (B) is **incorrect**. Total sales are not collected in the month of sale.
- Answer (C) is **incorrect**. The amount of \$402,000 represents only 60% of receivables but 100% of receivables will be collected.
- Answer (D) is **correct**. Collections are expected to be 60% in the month of sale and 40% in the month following the sale. Thus, collections in December consist of the \$150,000 of receivables at November 30, plus 60% of December sales. Total collections are therefore \$462,000 [ $\$150,000 + (\$520,000 \times 60\%)$ ].

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**[Fact Pattern #4]**

Kelly Company is a retail sporting goods store that uses accrual accounting for its records. Facts regarding Kelly's operations are as follows:

- Sales are budgeted at \$220,000 for December Year 1 and \$200,000 for January Year 2.
- Collections are expected to be 60% in the month of sale and 38% in the month following the sale.
- Gross margin is 25% of sales.
- A total of 80% of the merchandise held for resale is purchased in the month prior to the month of sale and 20% is purchased in the month of sale. Payment for merchandise is made in the month following the purchase.
- Other expected monthly expenses to be paid in cash are \$22,600.
- Annual depreciation is \$216,000.

Below is Kelly Company's statement of financial position at November 30, Year 1.

Assets

Cash	\$ 22,000
Accounts receivable (net of \$4,000 allowance for uncollectible accounts)	76,000
Inventory	132,000
Property, plant, and equipment (net of \$680,000 accumulated depreciation)	870,000
Total assets	<u><u>\$1,100,000</u></u>

Liabilities and Stockholders' Equity

Accounts payable	\$ 162,000
Common stock	800,000
Retained earnings	138,000
Total liabilities and stockholders' equity	<u><u>\$1,100,000</u></u>

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**[20] Gleim #: 6.8.157 -- Source: CMA 1283 4-22**

(Refers to Fact Pattern #4)

Kelly's budgeted cash collections for December Year 1 are

- A. \$208,000
- B. \$132,000
- C. \$203,600
- D. \$212,000

- Answer (A) is **correct**. Since collections are 60% of the current month's sales and 38% of the previous month's sales, total collections should be

Accounts receivable	\$ 76,000
December sales of \$220,000 × 60%	<u>132,000</u>
Budgeted cash collections	<u><u>\$208,000</u></u>

- Answer (B) is **incorrect**. The amount of \$132,000 does not include accounts receivable.
- Answer (C) is **incorrect**. The budgeted cash collections for January Year 2 equals \$203,600.
- Answer (D) is **incorrect**. The amount of \$212,000 includes the \$4,000 allowance for uncollectible accounts.

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**[Fact Pattern #5]**

Esplanade Company has the following historical pattern for its credit sales:

- 70% collected in month of sale
- 15% collected in the first month after sale
- 10% collected in the second month after sale
- 4% collected in the third month after sale
- 1% uncollectible

The sales on open account have been budgeted for the last 6 months of the year as shown below:

July	\$ 60,000
August	70,000
September	80,000
October	90,000
November	100,000
December	85,000

**[21] Gleim #: 6.8.158 -- Source: CMA 692 3-27**

(Refers to Fact Pattern #5)

Esplanade's estimated total cash collections during October from accounts receivable are

- A. \$63,000
- B. \$84,400
- C. \$86,700
- D. \$21,400

- Answer (A) is **incorrect**. October collections from October sales only equals \$63,000.
- Answer (B) is **correct**. During October, collections will be received from sales made in October, September, August, and July.

Month	Sales		Percentage		Collections
October	\$90,000	×	70%	=	\$63,000
September	80,000	×	15%	=	12,000
August	70,000	×	10%	=	7,000
July	60,000	×	4%	=	2,400
Total collections					<u>\$84,400</u>

- Answer (C) is **incorrect**. The estimated total cash collections during December is \$86,700.
- Answer (D) is **incorrect**. The amount of \$21,400 will be the collections from sales made in previous months.

**[22] Gleim #: 6.8.159 -- Source: CMA 692 3-28**

(Refers to Fact Pattern #5)

Esplanade's estimated total cash collections during the fourth calendar quarter from sales made on open account during the fourth calendar quarter are

- A. \$170,500
- B. \$275,000
- C. \$230,000
- D. \$251,400

- Answer (A) is **incorrect**. The collections of October and November sales equals \$170,500.
- Answer (B) is **incorrect**. The total sales for the quarter equals \$275,000.



- Answer (C) is **correct**. For October sales, collections will be 70% in October, 15% in November, and 10% in December, a total of 95%. For November sales, collections will be 70% in November and 15% in December, a total of 85%. Collections on December sales will be 70%.

<u>Month</u>	<u>Sales</u>		<u>Percentage</u>		<u>Collections</u>
October	\$90,000	×	95%	=	\$85,500
November	100,000	×	85%	=	85,000
December	85,000	×	70%	=	<u>59,500</u>
Total collections					<u><u>\$230,000</u></u>

- Answer (D) is **incorrect**. The amount of \$251,400 includes sales made prior to the 4th quarter.

**[Fact Pattern #6]**

Information pertaining to Noskey Corporation's sales revenue is presented in the following table:

	November Year 1 <u>(Actual)</u>	December Year 1 <u>(Budget)</u>	January Year 2 <u>(Budget)</u>
Cash sales	\$ 80,000	\$100,000	\$ 60,000
Credit sales	<u>240,000</u>	<u>360,000</u>	<u>180,000</u>
Total sales	<u><u>\$320,000</u></u>	<u><u>\$460,000</u></u>	<u><u>\$240,000</u></u>

Management estimates that 5% of credit sales are uncollectible. Of the credit sales that are collectible, 60% are collected in the month of sale and the remainder in the month following the sale. Purchases of inventory are equal to next month's sales, and gross profit margin is 30%. All purchases of inventory are on account; 25% are paid in the month of purchase, and the remainder are paid in the month following the purchase.

**[23] Gleim #: 6.8.160 -- Source: CMA 1291 3-23**

(Refers to Fact Pattern #6)

Noskey Corporation's budgeted cash collections in December Year 1 from November Year 1 credit sales are

- A. \$84,000
- B. \$136,800
- C. \$228,000
- D. \$91,200

- Answer (A) is **incorrect**. The amount of \$84,000 is 35% of November credit sales, which incorrectly assumes uncollectible sales are 5%, cash collected in the month of sale is 60%, and cash collected in the month following the sale is 35%.
- Answer (B) is **incorrect**. The budgeted cash collections in November from November sales is \$136,800.
- Answer (C) is **incorrect**. The total expected to be collected in November and December from November sales is \$228,000.
- Answer (D) is **correct**. November credit sales were \$240,000. Of this amount, \$12,000 ( $\$240,000 \times 5\%$ ) will likely be written off. Given that 60% of the remaining credit sales are collected in the month of sale, 40% will be collected in the following month. Thus, December's expected cash collections are \$91,200 [ $(\$240,000 - \$12,000) \times 40\%$ ].

**[24] Gleim #: 6.8.161 -- Source: CMA 1291 3-24**

(Refers to Fact Pattern #6)

Noskey Corporation's budgeted total cash receipts in January Year 2 are

- A. \$240,000
- B. \$294,000
- C. \$299,400
- D. \$239,400

- Answer (A) is **incorrect**. Total cash and credit sales for January is \$240,000.
- Answer (B) is **incorrect**. The amount of \$294,000 incorrectly assumes that uncollectible sales are 5%, cash collected in the month of sale is 60%, and cash collected in the month following the sale is 35%.

- Answer (C) is **correct**. Collections during January will consist of 40% of December's collectible credit sales, 60% of January's collectible credit sales, and cash sales for January. The January collections of December sales are expected to be \$136,800 ( $\$360,000 \times 40\% \times 95\%$ ). The January collections of January credit sales are expected to be \$102,600 ( $\$180,000 \times 60\% \times 95\%$ ). Given January cash sales of \$60,000, total budgeted cash receipts for January are \$299,400 ( $\$136,800 + \$102,600 + \$60,000$ ).
- Answer (D) is **incorrect**. The amount of \$239,400 does not include cash from January cash sales.

**[26] Gleim #: 6.8.163 -- Source: CMA 0408 2-062**

Granite Company sells products exclusively on account and has experienced the following collection pattern: 60% in the month of sale, 25% in the month after sale, and 15% in the second month after sale. Uncollectible accounts are negligible. Customers who pay in the month of sale are given a 2% discount. If sales are \$220,000 in January, \$200,000 in February, \$280,000 in March, and \$260,000 in April, Granite's accounts receivable balance on May 1 will be

- A. \$107,120
- B. \$143,920
- C. \$146,000
- D. \$204,000

- Answer (A) is **incorrect**. The amount of \$107,120 is based on the wrong percentages.
- Answer (B) is **incorrect**. The amount of \$143,920 is based on the wrong percentages.
- Answer (C) is **correct**. Granite's sales and collections activity can be calculated as follows:

	Sales	Collections			
		January	February	March	April
January	\$220,000	\$132,000	\$55,000	\$33,000	
February	200,000		120,000	50,000	\$ 30,000
March	280,000			168,000	70,000
April	260,000				156,000
	<u>\$960,000</u>	<u>\$132,000</u>	<u>\$175,000</u>	<u>\$251,000</u>	<u>\$256,000</u>

Total collections for the period were \$814,000 ( $\$132,000 + \$175,000 + \$251,000 + 256,000$ ), leaving a balance in accounts receivable on May 1 of \$146,000 ( $960,000 - \$814,000$ ). This total is composed of \$104,000 from April sales and \$42,000 (15%) of March sales.

- Answer (D) is **incorrect**. The amount of \$204,000 is based on the wrong percentages.

[27] Gleim #: 6.8.164 -- Source: CMA 0408 2-063

The controller of Nottingham Stores has asked a staff accountant to prepare detailed reports that summarize the firm's cash flows for the upcoming accounting period and cash position at the end of the period. Accordingly, the controller has requested preparation of a cash budget, a pro-forma statement of cash flows, a detailed listing of cash collections from customers, and a detailed listing of cash payments for merchandise purchases.

Which one of the following correctly identifies the first and last document to be prepared by the accountant?

	<u>First Document</u>	<u>Last Document</u>
A.	Listing of cash collections	Pro-forma statement of cash flows
B.	Listing of cash collections	Cash budget
C.	Cash budget	Either the listing of cash collections or listing of cash payments, the order of which is unimportant
D.	Listing of cash payments	Either the pro-forma statement of cash flows or the cash budget, the order of which is unimportant

- Answer (A) is **correct**. The listing of cash collections must be prepared first, since cash must be collected before it can be spent. The pro forma statement of cash flows is the culmination of the entire budgeting process.
- Answer (B) is **incorrect**. The cash budget must precede the pro forma statement of cash flows.
- Answer (C) is **incorrect**. The listings of cash collections and payments must precede the cash budget.
- Answer (D) is **incorrect**. The pro forma statement of cash flows cannot be prepared until the cash budget is complete.

**[28] Gleim #: 6.8.165 -- Source: CMA 0408 2-064**

Myers Company uses a calendar year and prepares a cash budget for each month of the year. Which one of the following items should be considered when developing July's cash budget?

- A. Federal income tax and Social Security tax withheld from employees' June paychecks to be remitted to the Internal Revenue Service in July.
  - B. Quarterly cash dividends scheduled to be declared on July 15 and paid on August 6 to shareholders of record as of July 25.
  - C. Property taxes levied in the last calendar year scheduled to be paid quarterly in the coming year during the last month of each calendar quarter.
  - D. Recognition that 0.5% of the July sales on account will be uncollectible.
- Answer (A) is **correct**. Withholding amounts that must be forwarded to the federal government represent cash collections that must be disbursed. They would therefore be included in the cash budget for the month of disbursement.
  - Answer (B) is **incorrect**. The cash disbursement for the dividends will not be made until August.
  - Answer (C) is **incorrect**. The property tax remittances will not be made until September.
  - Answer (D) is **incorrect**. Uncollectible accounts do not involve a cash outlay.

**[29] Gleim #: 6.8.166 -- Source: CMA 0408 2-065**

Brown Company estimates that monthly sales will be as follows:

January	\$100,000
February	150,000
March	180,000

Historical trends indicate that 40% of sales are collected during the month of sale, 50% are collected in the month following the sale, and 10% are collected two months after the sale. Brown's accounts receivable balance as of December 31 totals \$80,000 (\$72,000 from December's sales and \$8,000 from November's sales). The amount of cash Brown can expect to collect during the month of January is

- A. \$76,800
- B. \$84,000
- C. \$108,000
- D. \$133,000

- Answer (A) is **incorrect**. The amount of \$76,800 results from treating the amounts given for previous months as total sales instead of remaining receivables.
- Answer (B) is **incorrect**. The amount of \$84,000 results from miscalculating the receivables from previous months.
- Answer (C) is **correct**. The amount collected in January on January sales will be \$40,000 ( $\$100,000 \times 40\%$ ). The \$72,000 balance in receivables from December sales represents 60% ( $50\% + 10\%$ ) of that month's total. Since the total December sales were \$120,000 ( $\$72,000 \div 60\%$ ), the amount expected to be collected in January is \$60,000 ( $\$120,000 \times 50\%$ ). The \$8,000 balance from November represents all the remaining expected collections from that month's sales. Thus, total January collections on receivables are expected to be \$108,000 ( $\$40,000 + \$60,000 + \$8,000$ ).
- Answer (D) is **incorrect**. The amount of \$133,000 results from using the complement of the collection percentages.

**[30] Gleim #: 6.8.167 -- Source: CMA 0408 2-067**

Bootstrap Corporation anticipates the following sales during the last 6 months of the year:

July	\$460,000
August	500,000
September	525,000
October	500,000
November	480,000
December	450,000

20% of Bootstrap's sales are for cash. The balance is subject to the collection pattern shown below.

Percentage of balance collected in the month of sale	40%
Percentage of balance collected in the month following sale	30%
Percentage of balance collected in the second month following sale	25%
Percentage of balance uncollectible	5%

What is the planned net accounts receivable balance as of December 31?

- A. \$279,300
- B. \$294,000
- C. \$360,000
- D. \$367,500

- Answer (A) is **incorrect**. The amount of \$279,300 results from subtracting the bad debts from the net receivables.

- Answer (B) is **correct**. December 31 receivables will consist of portions of credit sales from November ( $\$480,000 \times 80\% = \$384,000$ ) and December ( $\$450,000 \times 80\% = \$360,000$ ). The collections on these sales can be calculated as follows:

	Credit Sales	Collections			
		November	December	January	February
November	\$384,000	\$153,600	\$115,200	\$ 96,000	
December	360,000		144,000	108,000	\$90,000
				<u>\$204,000</u>	<u>\$90,000</u>

Bootstrap's December 31 balance in accounts receivable is therefore \$294,000 (\$204,000 + \$90,000).

- Answer (C) is **incorrect**. The amount of \$360,000 results from including an extra month in receivables that has already been collected.
- Answer (D) is **incorrect**. The amount of \$367,500 is based on total sales rather than credit sales.

**[31] Gleim #: 6.8.168 -- Source: CMA 0408 2-068**

Projected monthly sales of Wallstead Corporation for January, February, March, and April are as follows:

January	\$300,000
February	340,000
March	370,000
April	390,000

- The company bills each month's sales on the last day of the month.
- Receivables are booked gross and credit terms of sale are 2/10, n/30.
- 50% of the billings are collected within the discount period, 30% are collected by the end of the month, 15% are collected by the end of the second month, and 5% become uncollectible.

Budgeted cash collections for Wallstead Company during April would be

- A. \$343,300
- B. \$347,000
- C. \$349,300
- D. \$353,000



- Answer (A) is **correct**. April collections will consist of 15% of February's gross sales (\$51,000) and both components of March sales, those collected within the discount period ( $\$370,000 \times 98\% \times 50\% = \$181,300$ ), and those collected after it ( $\$370,000 \times 30\% = \$111,000$ ). Total April cash collections are therefore \$343,300 (\$51,000 + \$181,300 + \$111,000).
- Answer (B) is **incorrect**. The amount of \$347,000 results from failing to account for the 2% discount period on March sales.
- Answer (C) is **incorrect**. The amount of \$349,300 results from using April sales.
- Answer (D) is **incorrect**. The amount of \$353,000 uses April sales and overlooks the discount.

[32] Gleim #: 6.8.169 -- Source: CMA 0408 2-069

Tip-Top Cleaning Supply carries a large number of different items in its inventory, giving the firm a competitive advantage in its industry. Below is part of Tip-Top's budget for the first quarter of next year.

Sales	\$855,000
Cost of goods sold	425,000
Rent and salary expenses	375,000

Historically, all of the sales are on account and are made evenly over the quarter. 5% of all sales are determined to be uncollectible and written off. The balance of the receivables is collected in 50 days. This sales and collection experience is expected to continue in the first quarter. The projected balance sheet for the first day of the quarter includes the following account balances.

Cash	\$ 10,000
Accounts receivable (net)	450,000
Inventory	900,000
Accounts payable	800,000

How much cash can Tip-Top anticipate collecting in the first quarter (based on a 360-day year)?

- A. \$811,000
- B. \$830,000
- C. \$901,250
- D. \$902,500

- Answer (A) is **correct**. At the end of the quarter, sales will represent 50 days of sales, which is about 5/9 of the quarter. The other 4/9 of the quarter's sales will be collected during the quarter. Since bad debts will be 5% of sales, Tip-Top expects to collect \$812,250 ( $\$855,000 \times 95\%$ ). Multiply \$812,250 times 4/9 and the amount to be collected during the quarter is \$361,000. Add in the \$450,000 of beginning receivables to get total collections of \$811,000.
- Answer (B) is **incorrect**. The amount of \$830,000 results from failing to consider uncollectible accounts.
- Answer (C) is **incorrect**. The amount of \$901,250 results from using a 40-day collection period instead of a 50-day period.

- Answer (D) is **incorrect**. The amount of \$902,500 results from using a 40-day collection period and failing to deduct bad debts.

**[33] Gleim #: 6.8.170 -- Source: CMA 0408 2-072**

Prudent Corporation's budget for the upcoming accounting period reveals total sales of \$700,000 in April and \$750,000 in May. The sales cash collection pattern is

20% of each month's sales are cash sales.

5% of a month's credit sales are uncollectible.

70% of a month's credit sales are collected in the month of sale.

25% of a month's credit sales are collected in the month following the sale.

If Prudent anticipates the cash sale of a piece of old equipment in May for \$25,000, May's total budgeted cash receipts would be

- A. \$560,000
- B. \$702,500
- C. \$735,000
- D. \$737,500

- Answer (A) is **incorrect**. The amount of \$560,000 results from failing to include cash sales and the proceeds from the sale of the equipment.
- Answer (B) is **incorrect**. The amount of \$702,500 results from failing to consider uncollectible accounts and from deducting cash sales before calculating receivables.
- Answer (C) is **correct**. Prudent's cash collections can be calculated as follows:

	Total Sales	Credit Sales	Collections	
			April	May
April	\$700,000	\$560,000	\$392,000	\$140,000
May	750,000	600,000		420,000
Cash collections on credit sales			\$392,000	\$560,000
Cash sales			140,000	150,000
Proceeds from sale of equipment				25,000
Total cash received			<u>\$532,000</u>	<u>\$735,000</u>

- Answer (D) is **incorrect**. The amount of \$737,500 results from improperly including cash sales in the receivables payment pattern.

[34] Gleim #: 6.8.171 -- Source: CMA 0408 2-073

ANNCO sells products on account and experiences the following collection schedule:

In the month of sale	10%
In the month after sale	60%
In the second month after sale	30%

At December 31, ANNCO reports accounts receivable of \$211,500. Of that amount, \$162,000 is due from December sales and \$49,500 from November sales. ANNCO is budgeting \$170,000 of sales for January. If so, what amount of cash should be collected in January?

- A. \$129,050
- B. \$174,500
- C. \$211,500
- D. \$228,500

- Answer (A) is **incorrect**. All receivables from November would be collected in January, as would 2/3 of December's receivables.
- Answer (B) is **correct**. The \$49,500 of receivables from November sales that are still outstanding at December 31 are the last amounts that will be received from November. The \$162,000 in receivables from December sales that are still outstanding at December 31 contain the collections for the month and the second month after sale. Thus, this amount must constitute 90% of total sales for December (60% + 30%), meaning total December sales were \$180,000 ( $\$162,000 \div 90\%$ ). The portion of this that will be collected in January is \$108,000 ( $\$180,000 \times 60\%$ ). Of January's sales, 10% will be collected in January ( $\$170,000 \times 10\% = \$17,000$ ). Therefore, total cash collections for January will be \$174,500 ( $\$49,500 + \$108,000 + \$17,000$ ).
- Answer (C) is **incorrect**. The amount of \$211,500, the amount of receivables at December 31, is not the amount that will be collected in January.
- Answer (D) is **incorrect**. The amount of \$228,500 results from failing to divide the December portion in its month-after and second-month-after components.

[35] Gleim #: 6.8.172 -- Source: CMA 0408 2-075

Healthy Way, Inc., has decided to start a cash budgeting program to improve overall cash management. Information gathered from the past year reveals the following cash collection trends:

- 40% of sales are on credit
- 50% of credit sales are collected in month of sale
- 30% of credit sales are collected first month after sale
- 15% of credit sales are collected second month after sale
- 5% of credit sales result in bad debts

Gross sales for the last 5 months were as follows:

January	\$220,000
February	240,000
March	250,000
April	230,000
May	260,000

Sales for June are projected to be \$255,000. Based on this information, the expected cash receipts for March would be

- A. \$230,000
- B. \$237,400
- C. \$242,000
- D. \$243,200

- Answer (A) is **incorrect**. The amount of \$230,000 results from failing to account separately for cash sales.
- Answer (B) is **incorrect**. The amount of \$237,400 results from subtracting bad debts on April credit sales.

- Answer (C) is **correct**. Healthy Way's cash receipts can be calculated as follows:

	Total Sales	Credit Sales	Collections		
			January	February	March
January	\$220,000	\$88,000	\$ 44,000	\$ 26,400	\$ 13,200
February	240,000	96,000		48,000	28,800
March	250,000	100,000			50,000
Collections on credit sales			\$ 44,000	\$ 74,400	\$ 92,000
Collections on cash sales			132,000	144,000	150,000
Total cash collections			<u>\$176,000</u>	<u>\$218,400</u>	<u>\$242,000</u>

- Answer (D) is **incorrect**. The collections for March would be \$242,000.

[36] Gleim #: 6.8.173 -- Source: CMA 0408 2-077

Data regarding Johnsen, Inc.'s forecast dollar sales for the last 7 months of the year and Johnsen's projected collection patterns are as follows:

Forecasted sales	
June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

Types of sales	
Cash sales	30%
Credit sales	70%

Collection pattern on credit sales (5% determined to be uncollectible)	
During the month of sale	20%
During the first month following the sale	50%
During the second month following the sale	25%

Johnsen's budgeted cash receipts from sales and collections on account for September are

- A. \$635,000
- B. \$684,500
- C. \$807,000
- D. \$827,000

- Answer (A) is **incorrect**. The amount of \$635,000 results from failing to account separately for cash sales.

- Answer (B) is **correct**. Johnsen's cash receipts can be calculated as follows:

	Total Sales	Credit Sales	Collections			
			June	July	August	September
June	\$700,000	\$490,000	\$ 98,000	\$245,000	\$122,500	
July	600,000	420,000		84,000	210,000	\$105,000
August	650,000	455,000			91,000	227,500
September	800,000	560,000				112,000
Collections on credit sales			\$ 98,000	\$329,000	\$423,500	\$444,500
Collections on cash sales			210,000	180,000	195,000	240,000
Total cash collections			<u>\$308,000</u>	<u>\$509,000</u>	<u>\$618,500</u>	<u>\$684,500</u>

- Answer (C) is **incorrect**. The amount of \$807,000 results from adding in the final month of collections from June sales, which would have ended in August.
- Answer (D) is **incorrect**. Total collections for September would be \$684,500.



**[Fact Pattern #7]**

Karmee Company has been accumulating operating data in order to prepare an annual profit plan. Details regarding Karmee's sales for the first 6 months of the coming year are as follows:

Estimated Monthly Sales	Type of Monthly Sale
January \$600,000	Cash sales 20%
February 650,000	Credit sales 80%
March 700,000	
April 625,000	
May 720,000	
June 800,000	

Collection Pattern for Credit Sales	
Month of sale	30%
One month following sale	40%
Second month following sale	25%

Karmee's cost of goods sold averages 40% of the sales value. Karmee's objective is to maintain a target inventory equal to 30% of the next month's sales in units. Purchases of merchandise for resale are paid for in the month following the sale.

The variable operating expenses (other than cost of goods sold) for Karmee are 10% of sales and are paid for in the month following the sale. The annual fixed operating expenses are presented below. All of these are incurred uniformly throughout the year and paid monthly except for insurance and property taxes. Insurance is paid quarterly in January, April, July, and October. Property taxes are paid twice a year in April and October.

Annual Fixed Operating Costs	
Advertising	\$ 720,000
Depreciation	420,000
Insurance	180,000
Property taxes	240,000
Salaries	1,080,000

**[37] Gleim #: 6.8.174 -- Source: CMA 1296 3-6**

(Refers to Fact Pattern #7)

The amount of cash collected in March for Karmee Company from the sales made during March will be

- A. \$140,000
- B. \$308,000
- C. \$350,000
- D. \$636,000

- Answer (A) is **incorrect**. The amount of \$140,000 excludes collections on March credit sales.
- Answer (B) is **correct**. Cash sales are 20% of monthly sales, credit sales are 80% of monthly sales, and collections on credit sales are 30% in the month of sale. Consequently, cash collected during a month equals 44% [ $20\% + (30\% \times 80\%)$ ] of sales for that month. Cash collections in March on March sales were therefore \$308,000 ( $\$700,000 \times 44\%$ ).
- Answer (C) is **incorrect**. The amount of \$350,000 assumes 20% of sales are for cash and that collections on credit sales equal 30% of total sales.
- Answer (D) is **incorrect**. Total cash collections during March on first quarter sales equals \$636,000.

**[38] Gleim #: 6.8.175 -- Source: CMA 1296 3-7**

(Refers to Fact Pattern #7)

Karmee Company's total cash receipts for the month of April will be

- A. \$504,000
- B. \$629,000
- C. \$653,000
- D. \$707,400

- Answer (A) is **incorrect**. The amount of \$504,000 ignores \$125,000 of April cash sales.
- Answer (B) is **correct**. Cash collected during a month on sales for that month equals 44% of total sales. Hence, cash receipts in April on April's sales are \$275,000 ( $\$625,000 \times 44\%$ ). April collections on March credit sales equal \$224,000 ( $\$700,000 \times 40\% \times 80\%$ ). April collections on February credit sales equal \$130,000 ( $\$650,000 \times 25\% \times 80\%$ ). Thus, total cash receipts for April were \$629,000 ( $\$275,000 + \$224,000 + \$130,000$ ).
- Answer (C) is **incorrect**. The amount of \$653,000 includes \$24,000 of bad debts from January sales.
- Answer (D) is **incorrect**. The amount of \$707,400 represents June collections.

[1] Gleim #: 6.9.176 -- Source: CMA 0205 2-11

Holland Company is in the process of projecting its cash position at the end of the second quarter. Shown below is pertinent information from Holland's records.

Cash balance at end of 1st quarter	\$ 36,000
Cash collections from customers for 2nd quarter	1,300,000
Accounts payable at end of 1st quarter	100,000
Accounts payable at end of 2nd quarter	75,000
All 2nd quarter costs and expenses (accrual basis)	1,200,000
Depreciation (accrued expense included above)	60,000
Purchases of equipment (for cash)	50,000
Gain on sale of asset (for cash)	5,000
Net book value of asset sold	35,000
Repayment of notes payable	66,000

From the data above, determine Holland's projected cash balance at the end of the second quarter.

- A. \$0
- B. \$25,000
- C. \$60,000
- D. \$95,000

- Answer (A) is **incorrect**. The cash balance did change in the second quarter.
- Answer (B) is **incorrect**. Improperly deducting rather than adding the book value of the sold asset results in \$25,000.
- Answer (C) is **incorrect**. Failing to take the book value of the sold asset into account results in \$60,000 (the book value plus the gain is the cash received).

- Answer (D) is **correct**. The change in Holland's cash balance can be calculated as follows:

Beginning cash balance	\$ 36,000
Add: cash collections	1,300,000
Less: net change in accounts payable	(25,000)
Less: accrual-basis costs and expenses	(1,200,000)
Add: depreciation expense (noncash)	60,000
Less: payment for equipment	(50,000)
Add: net cash received from asset sale	40,000
Less: retirement of notes payable	<u>(66,000)</u>
Ending cash balance	<u><u>\$ 95,000</u></u>

**[2] Gleim #: 6.9.177 -- Source: CMA 0205 2-10**

Steers Company has just completed its prospective financial statements for the coming year. Relevant information is summarized below:

Projected net income	\$100,000
Anticipated capital expenditures	50,000
Increase in working capital	25,000
Depreciation expense	15,000

From the information provided above, the increase in Steers' cash account for the coming year will be

- A. \$25,000
- B. \$40,000
- C. \$90,000
- D. \$160,000

- Answer (A) is **incorrect**. The increase in working capital is not the only line item that affects cash.
- Answer (B) is **correct**. The change in cash can be calculated as follows:

Accrual-basis net income	\$100,000
Less: capital outlays	(50,000)
Less: increase in working capital	(25,000)
Add: depreciation expense (noncash)	<u>15,000</u>
Increase in cash	<u><u>\$ 40,000</u></u>

- Answer (C) is **incorrect**. The amount of \$90,000 ignores the outlays for capital expenditures.
- Answer (D) is **incorrect**. Improperly adding the capital outlays and increase in working capital and subtracting the depreciation expense results in \$160,000.

**[Fact Pattern #1]**

The Raymar Company is preparing its cash budget for the months of April and May. The firm has established a \$200,000 line of credit with its bank at a 12% annual rate of interest on which borrowings for cash deficits must be made in \$10,000 increments. There is no outstanding balance on the line of credit loan on April 1. Principal repayments are to be made in any month in which there is a surplus of cash. Interest is to be paid monthly. If there are no outstanding balances on the loans, Raymar will invest any cash in excess of its desired end-of-month cash balance in U.S. Treasury bills. Raymar intends to maintain a minimum balance of \$100,000 at the end of each month by either borrowing for deficits below the minimum balance or investing any excess cash. Expected monthly collection and disbursement patterns are shown below.

- *Collections*: 50% of the current month's sales budget and 50% of the previous month's sales budget.
- *Accounts Payable Disbursements*: 75% of the current month's accounts payable budget and 25% of the previous month's accounts payable budget.
- All other disbursements occur in the month in which they are budgeted.

	<u>Budget Information</u>		
	<u>March</u>	<u>April</u>	<u>May</u>
Sales	\$40,000	\$50,000	\$100,000
Accounts payable	30,000	40,000	40,000
Payroll	60,000	70,000	50,000
Other disbursements	25,000	30,000	10,000

**[3] Gleim #: 6.9.178 -- Source: CMA 1293 3-19**

(Refers to Fact Pattern #1)

In April, Raymar's budget will result in

- A. \$45,000 in excess cash.
- B. A need to borrow \$50,000 on its line of credit for the cash deficit.
- C. A need to borrow \$100,000 on its line of credit for the cash deficit.
- D. A need to borrow \$90,000 on its line of credit for the cash deficit.

- Answer (A) is **incorrect**. Cash receipts equals \$45,000.
- Answer (B) is **incorrect**. The cash deficit will be \$92,500 without borrowing.
- Answer (C) is **correct**. Assuming Raymar maintained a \$100,000 cash balance at the end of March, the amount to be borrowed or invested in April is the difference between cash receipts and disbursements. April's cash collections are \$45,000  $[(\$50,000 \text{ April sales} \times 50\%) + (\$40,000 \text{ March sales} \times 50\%)]$ . Disbursements for accounts payable are \$37,500  $[(\$40,000 \text{ April payables} \times 75\%) + (\$30,000 \text{ March payables} \times 25\%)]$ . In addition to the accounts payable disbursements, payroll and other disbursements will require an additional \$100,000. Hence, total disbursements are estimated to be \$137,500. The net negative cash flow (amount to be borrowed to reach the required minimum cash balance of \$100,000) is \$92,500  $(\$137,500 - \$45,000)$ . Because the line of credit must be drawn upon in \$10,000 increments, the loan must be for \$100,000.
- Answer (D) is **incorrect**. A loan of only \$90,000 would still leave a negative cash balance of \$2,500.

**[4] Gleim #: 6.9.179 -- Source: CMA 1293 3-20**

(Refers to Fact Pattern #1)

In May, Raymar will be required to

- A. Repay \$20,000 principal and pay \$1,000 interest.
  - B. Repay \$90,000 principal and pay \$100 interest.
  - C. Pay \$900 interest.
  - D. Borrow an additional \$20,000 and pay \$1,000 interest.
- Answer (A) is **incorrect**. No funds are available to repay the loan. May receipts are less than May disbursements.
  - Answer (B) is **incorrect**. No funds are available to repay the loan. May receipts are less than May disbursements.
  - Answer (C) is **incorrect**. The 1% interest is calculated on a \$100,000 loan, not a \$90,000 loan.

- Answer (D) is **correct**. The company will have to borrow \$100,000 in April, which means that interest will have to be paid in May at the rate of 1% per month (12% annual rate). Consequently, interest expense is \$1,000 ( $\$100,000 \times 1\%$ ). May receipts are \$75,000 [ $(\$100,000 \text{ May sales} \times 50\%) + (\$50,000 \text{ April sales} \times 50\%)$ ]. Disbursements in May are \$40,000 [ $(\$40,000 \text{ May payables} \times 75\%) + (\$40,000 \text{ April payables} \times 25\%)$ ]. In addition to the May accounts payable disbursements, payroll and other disbursements are \$60,000, bringing total disbursements to \$101,000 ( $\$60,000 + \$40,000 + \$1,000$ ). Thus, disbursements exceed receipts by \$26,000 ( $\$101,000 - \$75,000$ ). However, cash has a beginning surplus balance of \$7,500 ( $\$100,000 \text{ April loan} - \$92,500 \text{ negative cash flow for April calculated using the collections and disbursements information given}$ ). As a result, the company needs to borrow an additional \$18,500 to eliminate its cash deficit. Given the requirement that loans be in \$10,000 increments, the May loan must be for \$20,000.

**[Fact Pattern #2]**

Karmee Company has been accumulating operating data in order to prepare an annual profit plan. Details regarding Karmee's sales for the first 6 months of the coming year are as follows:

Estimated Monthly Sales	Type of Monthly Sale
January \$600,000	Cash sales 20%
February 650,000	Credit sales 80%
March 700,000	
April 625,000	
May 720,000	
June 800,000	

Collection Pattern for Credit Sales	
Month of sale	30%
One month following sale	40%
Second month following sale	25%

Karmee's cost of goods sold averages 40% of the sales value. Karmee's objective is to maintain a target inventory equal to 30% of the next month's sales in units. Purchases of merchandise for resale are paid for in the month following the sale.

The variable operating expenses (other than cost of goods sold) for Karmee are 10% of sales and are paid for in the month following the sale. The annual fixed operating expenses are presented below. All of these are incurred uniformly throughout the year and paid monthly except for insurance and property taxes. Insurance is paid quarterly in January, April, July, and October. Property taxes are paid twice a year in April and October.

Annual Fixed Operating Costs	
Advertising	\$ 720,000
Depreciation	420,000
Insurance	180,000
Property taxes	240,000
Salaries	1,080,000

**[5] Gleim #: 6.9.180 -- Source: CMA 1296 3-8**

(Refers to Fact Pattern #2)

The purchase of merchandise that Karmee Company will need to make during February will be

- A. \$254,000
- B. \$260,000
- C. \$266,000
- D. \$338,000



- Answer (A) is **incorrect**. The amount of \$254,000 reverses the treatment of the change in inventory.
- Answer (B) is **incorrect**. February COGS is \$260,000.
- Answer (C) is **correct**. Purchases equal cost of goods sold, plus ending inventory, minus beginning inventory. Estimated cost of goods sold for February equals \$260,000 ( $\$650,000 \text{ sales} \times 40\%$ ). Ending inventory is given as 30% of sales in units. Stated at cost, this amount equals \$84,000 ( $\$700,000 \text{ March sales} \times 30\% \times 40\%$ ). Furthermore, beginning inventory is \$78,000 ( $\$260,000 \text{ COGS for February} \times 30\%$ ). Thus, purchases equal \$266,000 ( $\$260,000 + \$84,000 - \$78,000$ ).
- Answer (D) is **incorrect**. The sum of COGS and beginning inventory equals \$338,000.

**[6] Gleim #: 6.9.181 -- Source: CMA 1296 3-9**

(Refers to Fact Pattern #2)

The amount for cost of goods sold that will appear on Karmee Company's pro forma income statement for the month of February will be

- A. \$195,000
- B. \$254,000
- C. \$260,000
- D. \$272,000

- Answer (A) is **incorrect**. The amount of \$195,000 is based on 30% of sales.
- Answer (B) is **incorrect**. Cost of goods sold, minus ending inventory, plus beginning inventory equals \$254,000.
- Answer (C) is **correct**. Cost of goods sold is expected to be 40% of sales. Thus, cost of goods sold is \$260,000 ( $\$650,000 \text{ February sales} \times 40\%$ ).
- Answer (D) is **incorrect**. Purchases, plus ending inventory, minus beginning inventory equals \$272,000.

[7] Gleim #: 6.9.182 -- Source: CMA 1296 3-10

(Refers to Fact Pattern #2)

The total cash disbursements that Karmee Company will make for the operating expenses (expenses other than the cost of goods sold) during the month of April will be

- A. \$255,000
- B. \$290,000
- C. \$385,000
- D. \$420,000

- Answer (A) is **incorrect**. The amount of \$255,000 excludes variable selling expenses and advertising.
- Answer (B) is **incorrect**. The amount of \$290,000 includes depreciation but excludes variable selling expenses and advertising.
- Answer (C) is **correct**. Cash disbursements for variable operating expenses in April (excluding cost of goods sold) equal \$70,000 (\$700,000 March sales  $\times$  10%). Cash disbursements for fixed operating expenses (excluding depreciation, a noncash expense) include advertising ( $\$720,000 \div 12 = \$60,000$ ), salaries ( $\$1,080,000 \div 12 = \$90,000$ ), insurance ( $\$180,000 \div 4 = \$45,000$ ), and property taxes ( $\$240,000 \div 2 = \$120,000$ ). Hence, cash payments for April operating expenses are \$385,000 (\$70,000 + \$60,000 + \$90,000 + \$45,000 + \$120,000).
- Answer (D) is **incorrect**. The amount of \$420,000 includes depreciation.

**[Fact Pattern #3]**

Information pertaining to Noskey Corporation's sales revenue is presented in the following table:

	November Year 1 (Actual)	December Year 1 (Budget)	January Year 2 (Budget)
Cash sales	\$ 80,000	\$100,000	\$ 60,000
Credit sales	240,000	360,000	180,000
Total sales	<u>\$320,000</u>	<u>\$460,000</u>	<u>\$240,000</u>

Management estimates that 5% of credit sales are uncollectible. Of the credit sales that are collectible, 60% are collected in the month of sale and the remainder in the month following the sale. Purchases of inventory are equal to next month's sales, and gross profit margin is 30%. All purchases of inventory are on account; 25% are paid in the month of purchase, and the remainder are paid in the month following the purchase.

**[15] Gleim #: 6.9.190 -- Source: CMA 1291 3-25**

(Refers to Fact Pattern #3)

Noskey Corporation's budgeted total cash payments in December Year 1 for inventory purchases are

- A. \$405,000
- B. \$283,500
- C. \$220,500
- D. \$168,000

- Answer (A) is **incorrect**. The purchases valued at sales price, not cost, is \$405,000.
- Answer (B) is **correct**. The December inventory payments include 75% of November purchases plus 25% of December purchases. Given a gross margin of 30%, cost must be 70% of sales. November purchases are therefore \$322,000 (\$460,000 December sales  $\times$  70%), and the December outlay for November purchases is \$241,500 (\$322,000  $\times$  75%). Purchases during December are \$168,000 (\$240,000 January sales  $\times$  70%), and the December outlay for December purchases is \$42,000 (\$168,000  $\times$  25%), a total cash outlay of \$283,500.
- Answer (C) is **incorrect**. The amount of \$220,500 is calculated based on credit sales, not total sales.
- Answer (D) is **incorrect**. The cash payment for December purchases only is \$168,000.

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**[Fact Pattern #4]**

Cooper Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review:

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase and the other 50% in the following month. All payments for other expenses are made in the month incurred.

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**[17] Gleim #: 6.9.192 -- Source: CMA 0408 2-066**

(Refers to Fact Pattern #4)

Cooper forecasts the following account balances at the beginning of the quarter.

Cash	\$100,000
Accounts receivable	300,000
Accounts payable (inventory)	500,000

Given the above information, the projected change in cash during the coming quarter will be

- A. \$412,500
- B. \$300,000
- C. \$112,500
- D. \$0

- Answer (A) is **incorrect**. The amount of \$412,500 results from including the beginning balance in cash and failing to include the beginning balances in accounts receivable and accounts payable.
- Answer (B) is **incorrect**. The amount of \$300,000 is merely the receivables from the previous quarter that will be collected in the current quarter.

- Answer (C) is **correct**. Cooper's collections for the quarter can be calculated as follows:

		Collections		
	Sales	January	February	March
January	\$700,000	\$280,000	\$420,000	
February	800,000		320,000	\$480,000
March	500,000			200,000
		<u>\$280,000</u>	<u>\$740,000</u>	<u>\$680,000</u>

Total collections are therefore \$1,700,000 (\$280,000 + \$740,000 + \$680,000). The disbursements for inventory can likewise be calculated as follows:

		Disbursements		
	Inventory Purchases	January	February	March
January	\$350,000	\$175,000	\$175,000	
February	425,000		212,500	\$212,500
March	225,000			112,500
		<u>\$175,000</u>	<u>\$387,500</u>	<u>\$325,000</u>

Total inventory disbursements are therefore \$887,500 (\$175,000 + \$387,500 + \$325,000). Disbursements for other expenses total \$500,000 (\$150,000 + \$175,000 + \$175,000). The net change in Cooper's balance of cash for the quarter can now be calculated:

Collections on sales	\$1,700,000
Disbursements for inventory	(887,500)
Disbursements for other expenses	(500,000)
Beginning accounts receivable	300,000
Beginning accounts payable	<u>(500,000)</u>
Change in cash	<u>\$ 112,500</u>

- Answer (D) is **incorrect**. Cash will increase during the quarter (receipts will exceed payments).

**[18] Gleim #: 6.9.193 -- Source: CMA 0408 2-070**

Monroe Products is preparing a cash forecast based on the following information:

- Monthly sales: December, \$200,000; January, \$200,000; February, \$350,000; March, \$400,000.
- All sales are on credit and collected the month following the sale.
- Purchases are 60% of next month's sales and are paid for in the month of purchase.
- Other monthly expenses are \$25,000, including \$5,000 of depreciation.

If the January beginning cash balance is \$30,000, and Monroe is required to maintain a minimum cash balance of \$10,000, how much short-term borrowing will be required at the end of February?

- A. \$60,000
- B. \$70,000
- C. \$75,000
- D. \$80,000

- Answer (A) is **incorrect**. The amount of \$60,000 results from failing to include the minimum balance requirement.
- Answer (B) is **correct**. Monroe's short-term cash requirements at the end of February can be calculated as follows:

Beginning cash balance	\$ 30,000
Collections on December sales (in January)	200,000
Collections on January sales (in February)	200,000
Disbursements for inventory (in January)	(210,000)
Disbursements for inventory (in February)	(240,000)
Disbursements for other expenses (in January)	(20,000)
Disbursements for other expenses (in February)	(20,000)
Minimum balance requirement	<u>(10,000)</u>
Shortfall	<u><u>\$ (70,000)</u></u>

- Answer (C) is **incorrect**. The amount of \$75,000 results from treating that one month of depreciation as a cash expense, which it is not.
- Answer (D) is **incorrect**. The amount of \$80,000 results from treating depreciation as a cash expense.

**[19] Gleim #: 6.9.194 -- Source: CMA 0408 2-078**

The Mountain Mule Glove Company is in its first year of business. Mountain Mule had a beginning cash balance of \$85,000 for the quarter. The company has a \$50,000 short-term line of credit. The budgeted information for the first quarter is shown below.

	<u>January</u>	<u>February</u>	<u>March</u>
Sales	\$60,000	\$40,000	\$50,000
Purchases	35,000	40,000	75,000
Operating costs	25,000	25,000	25,000

All sales are made on credit and are collected in the second month following the sale. Purchases are paid in the month following the purchase, while operating costs are paid in the month that they are incurred. How much will Mountain Mule need to borrow at the end of the quarter if the company needs to maintain a minimum cash balance of \$5,000, as required by a loan covenant agreement?

- A. \$0
- B. \$5,000
- C. \$10,000
- D. \$45,000

- Answer (A) is **incorrect**. Expenses will exceed income for the quarter.
- Answer (B) is **incorrect**. The amount of \$5,000 is only the minimum required balance.
- Answer (C) is **correct**. Mountain Mule's short-term borrowing needs can be calculated as follows:

Beginning cash balance	\$ 85,000
Collections on January sales (in March)	60,000
Disbursements for January inventory (in February)	(35,000)
Disbursements for February inventory (in March)	(40,000)
Disbursements for other expenses (\$25,000 × 3)	(75,000)
Minimum balance requirement	<u>(5,000)</u>
Shortfall	<u><u>\$ (10,000)</u></u>

- Answer (D) is **incorrect**. The amount of \$45,000 results from simply drawing the entire line of credit over the minimum balance.

**[8] Gleim #: 6.10.202 -- Source: CMA 0408 2-036**

Netco's sales budget for the coming year is as follows.

<u>Item</u>	<u>Volume in Units</u>	<u>Sales Price</u>	<u>Sales Revenue</u>
1	200,000	\$50	\$10,000,000
2	150,000	10	1,500,000
3	300,000	30	<u>9,000,000</u>
Total sales revenue			<u><u>\$20,500,000</u></u>

Items 1 and 3 are different models of the same product. Item 2 is a complement to Item 1. Past experience indicates that the sales volume of Item 2 relative to the sales volume of Item 1 is fairly constant. Netco is considering a 10% price increase for the coming year for Item 1, which will cause sales of Item 1 to decline by 20%, while simultaneously causing sales of Item 3 to increase by 5%. If Netco institutes the price increase for Item 1, total sales revenue will decrease by

- A. \$1,050,000
- B. \$850,000
- C. \$750,000
- D. \$550,000



- Answer (A) is **correct**. First, the changes in sales volume can be calculated:

<u>Item</u>	<u>Unit Volume Before Price Change</u>		<u>Unit Change Factor</u>		<u>Unit Volume After Price Change</u>
1	200,000	×	0.80	=	160,000
2	150,000	×	0.80	=	120,000
3	300,000	×	1.05	=	315,000

Next, the changes in unit price:

<u>Item</u>	<u>Price Before Price Change</u>		<u>Price Change Factor</u>		<u>Price After Price Change</u>
1	\$50	×	1.10	=	\$55
2	10	×	1.00	=	10
3	30	×	1.00	=	30

Third, the total sales revenue resulting from the changes in volume and price:

<u>Item</u>	<u>Unit Volume After Price Change</u>		<u>Price After Price Change</u>		<u>Sales Revenue After Price Change</u>
1	160,000	×	\$55	=	\$8,800,000
2	120,000	×	10	=	1,200,000
3	315,000	×	30	=	9,450,000
					<u>\$19,450,000</u>

The decrease in Netco's total revenue after the price change will therefore be \$1,050,000 (\$20,500,000 – \$19,450,000).

- Answer (B) is **incorrect**. The amount of \$850,000 results from increasing the price of Item 3 rather than the volume.
- Answer (C) is **incorrect**. The amount of \$750,000 results from failing to reduce the unit volume of Item 2 in tandem with the reduction in Item 1.
- Answer (D) is **incorrect**. Total sales revenue will decrease by \$1,050,000.

---

**[Fact Pattern #1]**

Super Drive, a computer disk storage and back-up company, uses accrual accounting. The company's Statement of Financial Position for the year ended November 30 is as follows:

Super Drive  
Statement of Financial Position  
as of November 30

Assets		Liabilities and Stockholders' Equity	
Cash	\$ 52,000	Accounts payable	\$ 175,000
Accounts receivable, net	150,000	Common stock	900,000
Inventory	315,000	Retained earnings	<u>442,000</u>
Property, plant, and equipment	<u>1,000,000</u>	Total liabilities and	
Total assets	<u>\$1,517,000</u>	stockholders' equity	<u>\$1,517,000</u>

Additional information regarding Super Drive's operations include the following:

- Sales are budgeted at \$520,000 for December and \$500,000 for January of the next year.
- Collections are expected to be 60% in the month of sale and 40% in the month following the sale.
- Eighty percent of the disk drive components are purchased in the month prior to the month of sale, and 20% are purchased in the month of sale. Purchased components are 40% of the cost of goods sold.
- Payment for the components is made in the month following the purchase.
- Cost of goods sold is 80% of sales.

---

**[9] Gleim #: 6.10.203 -- Source: CMA 1294 3-8**

(Refers to Fact Pattern #1)

Super Drive's projected balance in accounts payable on December 31 is

- A. \$161,280
- B. \$326,400
- C. \$166,400
- D. \$416,000

- Answer (A) is **correct**. Payments are made in the month following purchase. The balance in accounts payable on November 30 is \$175,000; this amount will be paid in December. The account is credited for purchases of a portion of components to be used for sales in December (20% of December components) and for sales in January (80% of January components). Cost of goods sold is 80% of sales, and components are 40% of cost of goods sold. Thus, December component needs are \$166,400 ( $\$520,000 \text{ sales} \times 80\% \times 40\%$ ), and January component needs are \$160,000 ( $\$500,000 \text{ sales} \times 80\% \times 40\%$ ). The December purchases of December component needs equal \$33,280 ( $\$166,400 \times 20\%$ ). December purchases of January component needs are \$128,000 ( $\$160,000 \times 80\%$ ). Hence, the total of December purchases (ending balance in accounts payable) equals \$161,280 ( $\$33,280 + \$128,000$ ).
- Answer (B) is **incorrect**. The sum of the component needs for December and January equals \$326,400.
- Answer (C) is **incorrect**. December component needs equals \$166,400.
- Answer (D) is **incorrect**. Cost of sales for December equals \$416,000.

[10] Gleim #: 6.10.204 -- Source: CMA 1294 3-9

(Refers to Fact Pattern #1)

Super Drive's projected gross profit for the month ending December 31 is

- A. \$416,000
- B. \$104,000
- C. \$134,000
- D. \$536,000

- Answer (A) is **incorrect**. Cost of goods sold is \$416,000 (80% of sales).
- Answer (B) is **correct**. Given that cost of goods sold is 80% of sales, gross profit is 20% of sales. Consequently, pro forma gross profit is \$104,000 ( $\$520,000 \times 20\%$ ).
- Answer (C) is **incorrect**. The amount of \$134,000 equals 20% of the sum of November receivables and December sales.
- Answer (D) is **incorrect**. Gross profit cannot be greater than sales.

---

**[Fact Pattern #2]**

Kelly Company is a retail sporting goods store that uses accrual accounting for its records. Facts regarding Kelly's operations are as follows:

- Sales are budgeted at \$220,000 for December Year 1 and \$200,000 for January Year 2.
- Collections are expected to be 60% in the month of sale and 38% in the month following the sale.
- Gross margin is 25% of sales.
- A total of 80% of the merchandise held for resale is purchased in the month prior to the month of sale and 20% is purchased in the month of sale. Payment for merchandise is made in the month following the purchase.
- Other expected monthly expenses to be paid in cash are \$22,600.
- Annual depreciation is \$216,000.

Below is Kelly Company's statement of financial position at November 30, Year 1.

Assets

Cash	\$ 22,000
Accounts receivable (net of \$4,000 allowance for uncollectible accounts)	76,000
Inventory	132,000
Property, plant, and equipment (net of \$680,000 accumulated depreciation)	870,000
Total assets	<u><u>\$1,100,000</u></u>

Liabilities and Stockholders' Equity

Accounts payable	\$ 162,000
Common stock	800,000
Retained earnings	138,000
Total liabilities and stockholders' equity	<u><u>\$1,100,000</u></u>

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**[11] Gleim #: 6.10.205 -- Source: CMA 1283 4-23**

(Refers to Fact Pattern #2)

Kelly's pro forma income (loss) before income taxes for December Year 1 is

- A. \$32,400
- B. \$28,000
- C. \$10,000
- D. Some amount other than those given.

- Answer (A) is **incorrect**. The amount of \$32,400 does not reflect depreciation or bad debt expense.
- Answer (B) is **incorrect**. The amount of \$28,000 does not consider depreciation.
- Answer (C) is **correct**. Sales are budgeted at \$220,000. Given that cost of goods sold is 75% of sales, or \$165,000, gross profit is \$55,000. Deduct cash expenses of \$22,600, depreciation of \$18,000 ( $\$216,000 \div 12$ ), and bad debt expense of \$4,400 ( $\$220,000 \times .02$ ). This leaves an income of \$10,000.
- Answer (D) is **incorrect**. The correct amount is given in one of the other answer choices.

**[12] Gleim #: 6.10.206 -- Source: CMA 1283 4-24**

(Refers to Fact Pattern #2)

Kelly's projected balance in accounts payable on December 31, Year 1, is

- A. \$162,000
- B. \$204,000
- C. \$153,000
- D. Some amount other than those given.

- Answer (A) is **incorrect**. The accounts payable balance on November 30 is \$162,000.
- Answer (B) is **incorrect**. Estimated purchases in December at the company's selling prices equals \$204,000.
- Answer (C) is **correct**. The balance is equal to the purchases made during December since all purchases are paid for in the month following purchase. Purchases for December is given as 20% of December's sales and 80% of January's sales. Thus, of the \$220,000 of merchandise sold during December, 20%, or \$44,000, would have been purchased during the month. January's sales are expected to be \$200,000, so 80% of that amount, or \$160,000, would have been purchased during December. December purchases are thus estimated as \$204,000 at the company's selling prices. The merchandise costs only 75% of the marked selling prices, however. Therefore, the balance in the purchases account at month-end is projected to be \$153,000 ( $\$204,000 \times 75\%$ ).
- Answer (D) is **incorrect**. The correct amount is given in one of the other answer choices.

[13] Gleim #: 6.10.207 -- Source: CMA 1283 4-25

(Refers to Fact Pattern #2)

Kelly's projected balance in inventory on December 31, Year 1, is

- A. \$160,000
- B. \$120,000
- C. \$153,000
- D. \$150,000

- Answer (A) is **incorrect**. Ending inventory at the company's selling prices equals \$160,000.
- Answer (B) is **correct**. The inventory is expected to be 80% of January's needs. Projected January sales of  $\$200,000 \times 80\% = \$160,000$ . Thus, the ending inventory would be goods that the company could sell for \$160,000. Given a gross margin of 25%, cost would only be 75% of sales, and ending inventory would be \$120,000 ( $\$160,000 \times 75\%$ ).
- Answer (C) is **incorrect**. The projected balance in accounts payable is \$153,000.
- Answer (D) is **incorrect**. The ending inventory would be \$150,000 if 100% of January's needs are purchased in December.



# PART 1

# Financial Planning, Performance and Control

## C. Cost Management (25% - Levels A, B, and C) U.4,5,6 & 7

This section represents 25% of the Part 1 Exam. This section focuses on the process of determining and also ways of controlling how much it costs to produce a product. This includes several types of cost accumulation and cost allocation systems as well as sources of operational efficiency and business process performance for a firm. An important concept in the business process performance portion is the concept of competitive advantage and how a firm can attain it.



STUDY UNIT Four

## COST MANAGEMENT TERMINOLOGY AND CONCEPTS

### MANAGEMENT ACCOUNTING, FINANCIAL ACCOUNTING, AND COST ACCOUNTING (different goals)

#### Management accounting (internal reporting)

- Measures and reports financial and nonfinancial information that helps managers make decisions to fulfill the goals of an organization.

#### Financial accounting (external reporting based on generally accepted accounting principles (GAAP)).

#### Cost accounting

- provides information for management accounting and financial accounting.

#### Cost Management

- describe the approaches and activities of managers in short-run and long-run planning and control decisions that increase value for customers and lower costs of products and services.

#### Three features of cost accounting and cost management across a wide range of applications are:

- Calculating the cost of products, services, and other cost objects (CMA Part 1).
- Obtaining information for planning and control and performance evaluation (CMA Part 1).
- Analyzing the relevant information for making decisions (CMA Part 2).

### Cost, Cost objects and Cost pools

#### Cost

**Cost** a resource sacrificed or forgone to achieve a specific objective. An actual cost is the cost incurred (a historical cost), as distinguished from a budgeted (or forecasted) cost.

#### Cost Pool

Often costs are collected into meaningful groups called **cost pools**.

#### Cost object (anything for which a measurement of costs is desired)

Examples: A cost object is any

- product,
- service,
- customer,
- activity, or
- organizational unit

to which costs are assigned for some management purpose.

#### Cost accumulation and Cost assignment

A costing system typically accounts for costs in two basic stages: accumulation followed by assignment.

**Cost accumulation** is the collection of cost data in some organized way by means of an accounting system.

Beyond accumulating costs, managers **assign** costs to designated cost objects

**Cost assignment** is a general term that encompasses both:

- tracing** accumulated costs that have a *direct* relationship to a cost object and
- allocating** accumulated costs that have an *indirect* relationship to a cost object.





## Direct cost and Indirect cost (TRACING COSTS TO COST OBJECTS)

### Direct costs of a cost object (EASILY TRACED)

A direct cost can be easily (i.e., conveniently and economically without excessive cost and without significant effort) traced to a cost pool or object, as the cost directly relates to that item.

Common direct costs include:

1. Direct Raw Materials:
2. Direct Labor

### Indirect costs of a cost object (not easily traceable to a cost pool or cost object)

Indirect costs are related to the particular cost object but cannot be traced to a cost object in an economically feasible (cost-effective) way. Indirect costs are typically incurred to benefit two or more cost pools or objects.

Examples of indirect costs include:

1. Indirect Materials
2. Indirect Labor
3. Other Indirect Costs (Common cost)

### "OVERHEAD" ALLOCATION USING ALLOCATION BASES (COST DRIVERS)

**Cost allocation** is made by using **cost drivers** (also called **allocation bases**), management accountants use cost allocation techniques in cases which direct tracing is not possible, and so cost drivers are used instead.

**Cost drivers** are: Activities that cause costs to increase as the activity increases

For example, if the cost driver for materials handling cost is the number of parts, the total cost of materials handling can be assigned to each product on the basis of its total number of parts relative to the total number of parts in all other products.

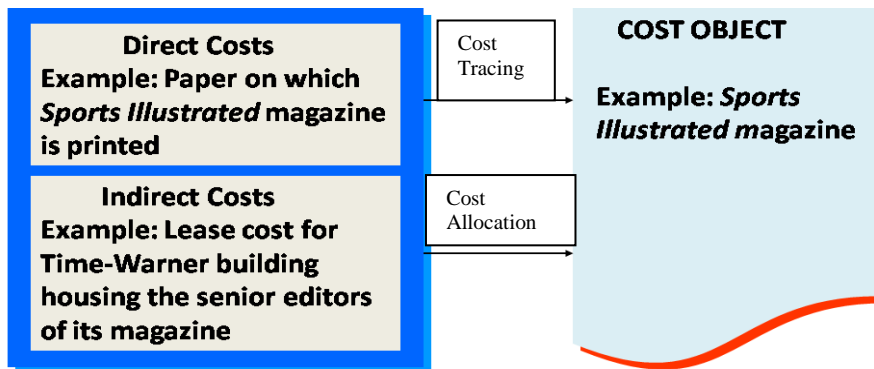
**Cost allocation is necessary for, among other things,**

- product costing (P1 CMA),
- pricing(P2 CMA),,
- investment and disinvestment decisions(P2 CMA),,
- managerial performance measurement(P1 CMA),,
- make-or-buy decisions(P2 CMA),
- determination of profitability(P2 CMA), and
- measuring income and assets for external reporting(P1 CMA).

Cost allocation is less meaningful for internal purposes because responsibility accounting systems emphasize controllability, a process often ignored in cost allocation.



## Example: Cost Assignment



### Reasons for indirect cost allocation to cost objects

- measure income and assets for external reporting purposes.
- justify costs for reimbursement purposes.
- provide information for economic decision making
- To motivate managers and employees

## Manufacturing and Nonmanufacturing costs

### Manufacturing Costs (Treated as Product Costs)

Most manufacturing companies separate manufacturing costs into three broad categories:

1. **Direct Materials** costs are the acquisition costs of all materials that eventually become part of the cost object (work in process and then finished goods) and that can be traced to the cost object in an economically feasible way.

Examples of direct material costs are the aluminum used to make Pepsi cans and the paper used to print Sports Illustrated.

2. **Direct manufacturing labor costs** include the compensation of all manufacturing labor that can be traced to the cost object (work in process and then finished goods) in an economically feasible way.

Examples include wages and fringe benefits paid to machine operators and assembly-line workers who convert direct materials purchased to finished goods.

3. **Indirect manufacturing costs** are all manufacturing costs that are related to the cost object (work in process and then finished goods) but that cannot be traced to that cost object in an economically feasible way.

Indirect manufacturing costs "Manufacturing overhead" includes items such as

- I. indirect materials;
- II. indirect labor and
- III. other MOH costs.

### Common practice (single cost pool)

Usually all indirect costs-for indirect materials, indirect labor, and other indirect items-are commonly combined into a single cost pool called overhead.



The previous costs can be combined as follows

1. **Prime costs** which include (DM & DL) and
2. **Conversion cost** which include (DL & MOH).

### Nonmanufacturing costs (selling, general, and administrative (SG&A) costs) (Treated as Period Costs)

Nonmanufacturing costs are often divided into two categories:

- (1) Selling costs and
- (2) General & administrative costs.

Nonmanufacturing costs can be viewed by the value chain costs other than manufacturing:

- Research and development costs
- Design costs
- Marketing costs
- Distribution costs
- Customer service costs
- Administrative costs

## Product costs and period costs

### Product (inventoriable) costs

For financial accounting purposes, product costs include all costs involved in acquiring or making a product (only the costs necessary to complete the product), product costs are capitalized as part of finished goods inventory, then become a component of cost of goods sold.

Product costs for a manufacturing firm include,

1. **Direct materials.** The materials used to manufacture the product, which become a physical part of it.
2. **Direct labor.** The labor used to manufacture the product.
3. **Factory overhead.** The indirect costs for materials, labor, and facilities used to support the manufacturing process.

### Period (expired) costs

Period costs are all the costs that are not product costs. Thus it includes all nonmanufacturing costs in the income statement such as general, selling, and administrative and any abnormal spoilage costs that are necessary for the management of the company but are not involved directly or indirectly in the manufacturing process (or in the purchase of the products for resale). For financial accounting purposes, period costs include all the value-chain costs except the production costs.

## Types of inventory in manufacturing firms

Manufacturing firms have three types of inventory:

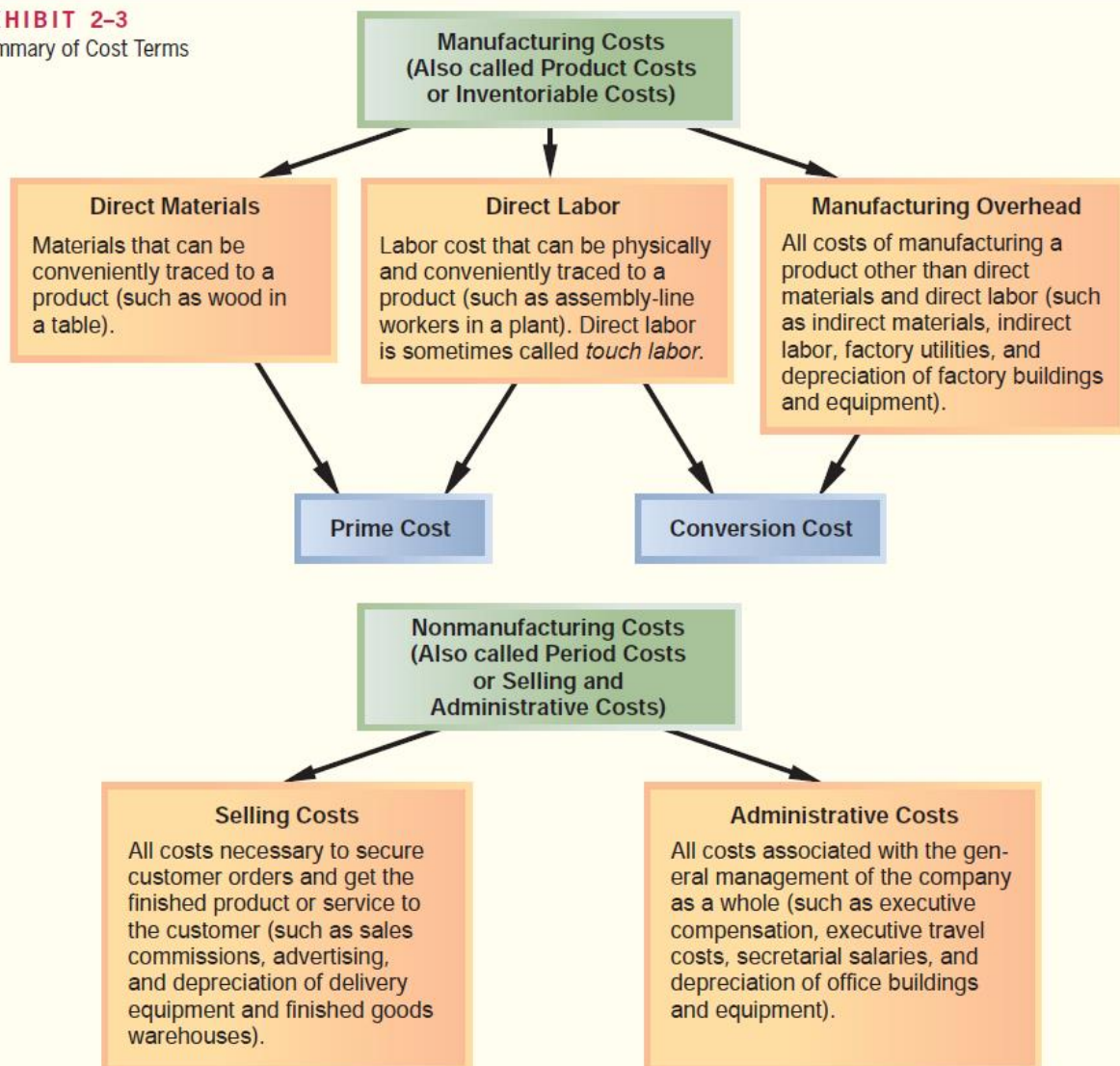
1. **Direct materials inventory.** Direct materials in stock and awaiting use in the manufacturing process (for example, the computer chips and components needed to manufacture cellular phones).
2. **Work-in-process (also called work in progress) inventory.** Goods partially worked on but not yet fully completed (for example, cellular phones at various stages of completion in the manufacturing process).
3. **Finished-goods inventory.** Goods (for example, cellular phones) fully completed but not yet sold.



Exhibit 5-3 contains a summary of the cost terms that we have introduced so far.

**EXHIBIT 2-3**

Summary of Cost Terms



**PASS KEY**

Cost accounting systems are designed to meet the goal of measuring cost objects or objectives. The most frequent objectives include:

- Product Costing (inventory and cost of goods manufactured and sold)
- Efficiency Measurements (comparisons to standards)
- Income Determination (profitability)



## Cost behavior Patterns: Variable costs and fixed costs

### A. VARIABLE COST

#### 1. Behavior

A variable cost changes proportionally with the cost driver (e.g., typical cost drivers include sales volume and production volume).

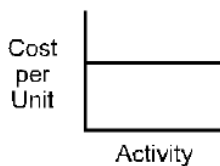
#### 2. Amount (Constant Per Unit, Total Varies)

##### Variable cost & activity

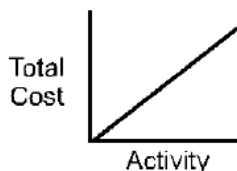
A variable cost is a cost that varies, in total, in direct proportion to changes in the level of activity or volume (the cost driver). The activity can be expressed in many ways, such as units produced, units sold, miles driven, beds occupied, lines of print, hours worked, and so forth.

**Example:** A good example of a variable cost is direct materials. The cost of direct materials used during a period will vary, in total, in direct proportion to the number of units that are produced, another examples direct labor and part of manufacturing overhead.

Variable cost per unit remains constant in the short run regardless of the level of production. Straight line, parallel to the horizontal axis.



Variable costs in total, on the other hand, vary directly and proportionally with changes in volume. Straight line, sloping upward to the right.



### B. FIXED COST

#### 1. Behavior

In the short-term and within a relevant range, a fixed cost does not change when the cost driver changes.

A fixed cost is a cost that remains constant, in total, for a given time period despite, regardless of changes in the level of activity.

#### 2. Amount (Varies per Unit, Total Remains Constant)

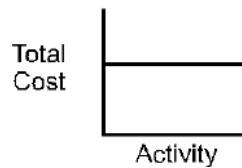
##### **PASS KEY**

The distinction between variable costs and fixed costs allows managers to determine the effect of a given percentage change in production output on costs. Be careful! The examiners often attempt to trick candidates by providing a fixed cost per unit for a given volume of production. As fixed costs are "fixed," the candidate must convert this format to a dollar amount that will not change as production volume changes within a relevant range.



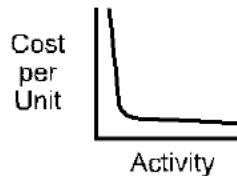
### 3. Long-Run Characteristics

Given enough time (and a long enough relevant range), any cost can be considered variable.



Total Fixed cost, Straight line, parallel to the horizontal axis.

Fixed cost per unit, on the other hand, varies indirectly with the activity level, the unit cost decreases as volume increases.



#### Relevant range (cost relationships hold constant)

The relevant range is the range for which the assumptions of the cost driver (i.e., **linear relationship** with the costs incurred) are valid. Total costs are assumed to be linear when plotted on a graph.

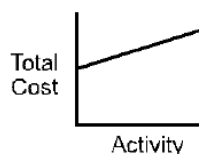
A summary of both variable and fixed cost behavior .

Cost	Behavior of the Cost (within the relevant range)	
	In Total	Per Unit
Variable cost	Total variable cost increases and decreases in proportion to changes in the activity level.	Variable cost per unit remains constant.
Fixed cost	Total fixed cost is not affected by changes in the activity level within the relevant range.	Fixed cost per unit decreases as the activity level rises and increases as the activity level falls.

### C. SEMI-VARIABLE COSTS (MIXED COSTS)

Costs frequently contain both fixed and variable components. A cost that includes components which remain constant over the relevant range and includes components that fluctuate in direct relation to production are termed semi variable.

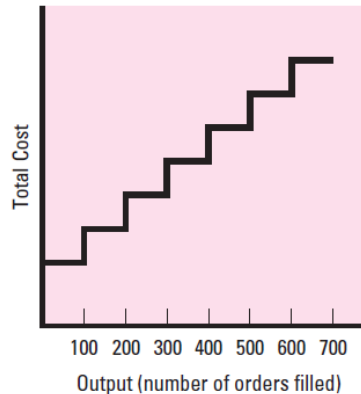
**Mixed (semivariable) costs** combine fixed and variable elements, e.g., rental expense on a car that carries a flat fee per month plus an additional fee for each mile driven.





**Step Costs** a cost is said to be a step cost when it varies with the cost driver but does so in discrete steps (Exhibit 3-15). step costs is another type of nonlinear-cost function, one that is constant over small ranges of output but increases by steps (discrete amounts) as levels of activity increase.

**EXHIBIT 3.9** A Step Cost



## Methods of estimating mixed costs

Sometimes the fixed and variable portions of a mixed cost are not set by contract as in the above example and thus must be estimated. **Two methods of estimating mixed costs are in general use:**

- The high-low method
- The regression (scattergraph) method

### The high-low method

The high-low method is the less accurate but the quicker of the two methods. The difference in cost between the highest and lowest levels of activity is divided by the difference in the activity level to arrive at the variable portion of the cost.

EXAMPLE: A company has the following cost data:

Month	Machine Hours	Maintenance Costs
April	1,000	\$2,275
May	1,600	\$3,400
June	1,200	\$2,650
July	800	\$1,900
August	1,200	\$2,650
September	1,000	\$2,275

The slope coefficient,  $b$ , is calculated as follows:

$$\text{Slope coefficient} = \frac{\text{Difference between costs associated with highest and lowest observations of the cost driver}}{\text{Difference between highest and lowest observations of the cost driver}}$$

*The numerator* can be derived by subtracting the cost at the lowest level (July) from the cost at the highest level (May) [\$3,400 – \$1,900 = \$1,500].

*The denominator* can be derived by subtracting the lowest level of activity (July) from the highest level (May) [1,600 – 800 = 800].





The *variable portion* of the cost is therefore \$1.875 per machine hour ( $\$1,500 \div 800$ ).

The *fixed portion* can be calculated by inserting the appropriate values for either the high or low month in the range:

$$\begin{aligned}\text{Fixed portion} &= \text{Total cost} - \text{Variable portion} \\ &= \$1,900 - (\$1.875 \times 800 \text{ hours}) \\ &= \$1,900 - \$1,500 \\ &= \$400\end{aligned}$$

### The regression (scattergraph) method

The regression (scattergraph) method is considerably more complex and determines the average rate of variability of a mixed cost rather than the variability between the high and low points in the range.

### Total costs and unit costs

In general, focus on total costs, not unit costs. When making total cost estimates think of variable costs as an amount per unit and fixed costs as a total amount. The unit cost of a cost object should be interpreted cautiously when it includes a fixed cost component.

## Relationships of types of costs

We have introduced two major classifications of costs: direct/indirect and variable/fixed costs may simultaneously be

- Direct and variable
- Direct and fixed
- Indirect and variable
- Indirect and fixed

Exhibit 3-9 shows examples of costs in each of these four cost classifications for the Ford Windstar.

		Assignment of Costs to Cost Object	
		Direct Costs	Indirect Costs
Cost-Behavior Pattern	Variable Costs	<ul style="list-style-type: none"> <li>• Cost object: BMW X5s produced</li> <li>Example: Tires used in assembly of automobile</li> </ul>	<ul style="list-style-type: none"> <li>• Cost object: BMW X5s produced</li> <li>Example: Power costs at Spartanburg plant. Power usage is metered only to the plant, where multiple products are assembled.</li> </ul>
	Fixed Costs	<ul style="list-style-type: none"> <li>• Cost object: BMW X5s produced</li> <li>Example: Salary of supervisor on BMW X5 assembly line</li> </ul>	<ul style="list-style-type: none"> <li>• Cost object: BMW X5s produced</li> <li>Example: Annual lease costs at Spartanburg plant. Lease is for whole plant, where multiple products are produced.</li> </ul>

#### Exhibit 2-5

Examples of Costs in Combinations of the Direct/Indirect and Variable/Fixed Cost Classifications for a Car Manufacturer





## Cost of goods sold in merchandising and manufacturing firms

### 1. Cost of goods sold in merchandising firms.

Cost of goods sold is a straightforward computation for a retailer because merchandising-sector companies purchase and then sell tangible products without changing their basic form, it have only a single class of inventory.

Beginning inventory	\$XX,XXX
Add: purchases	X,XXX
Less: ending inventory	(X,XXX)
<b>Cost of goods sold</b>	<b><u>XX,XXX</u></b>

### 2. Cost of goods sold in manufacturing firms.

The calculation is more complex for a manufacturer, because manufacturing-sector companies purchase materials and components and convert them into finished goods, manufacturers have three distinct classes of inventory.

**Cost of goods sold** contains an additional component called **cost of goods manufactured**, analogous to the retailer's purchases account.

Beginning work-in-process inventory	\$XX,XXX
Add: total manufacturing costs	X,XXX
Less: ending work-in-process inventory	(X,XXX)
<b>Cost of goods manufactured</b>	<b><u>XX,XXX</u></b>

A comparison of these computations in full is as follows:

Cost of goods sold for a retailer:			Cost of goods sold for a manufacturer:		
Beginning inventory		\$ XXX,XXX	Beginning raw materials inventory		\$ XXX,XXX
Add: Purchases	\$X,XXX,XXX		Add: Purchases	\$X,XXX,XXX	
Less: Returns and discounts	(XX,XXX)		Less: Returns and discounts	(XX,XXX)	
<b>Net purchases</b>	<b>X,XXX,XXX</b>		<b>Net purchases</b>	<b>X,XXX,XXX</b>	
Add: Freight-in	XX,XXX		Add: Freight-in	XX,XXX	
<b>Goods available for sale</b>	<b>X,XXX,XXX</b>		<b>Raw materials available for use</b>	<b>X,XXX,XXX</b>	
Less: Ending inventory	(XXX,XXX)		Less: Ending raw materials inventory	(XXX,XXX)	
<b>Costs of goods sold</b>	<b><u>XX,XXX,XXX</u></b>		<b>Direct materials used in production</b>		<b>\$X,XXX,XXX</b>
			Direct labor costs		X,XXX,XXX
			Manufacturing overhead costs		XXX,XXX
			<b>Total manufacturing costs for the period</b>		<b>X,XXX,XXX</b>
			Add: Beginning work-in-process inventory		XXX,XXX
			Less: Ending work-in-process inventory		(XXX,XXX)
			<b>Costs of goods manufactured</b>		<b>X,XXX,XXX</b>
			Add: Beginning finished goods inventory		XXX,XXX
			<b>Goods available for sale</b>		<b>X,XXX,XXX</b>
			Less: Ending finished goods inventory		(XXX,XXX)
			<b>Costs of goods sold</b>		<b><u>\$X,XXX,XXX</u></b>



## Cost Classification for decision making

To facilitate management decision making and planning, the management accountant provides relevant, timely, and accurate information at a reasonable cost. Relevance is the most critical of the decision-making concepts; timeliness, accuracy, and cost are unimportant if the information is irrelevant.

### Relevant Cost

The concept of relevant cost arises when the decision maker must choose between two or more options. To determine which option is best, the decision maker must determine which option offers the highest benefit, usually in dollars. Thus, the decision maker needs information on relevant costs.

A **relevant cost** has two properties: (1) it *differs for each decision option* and (2) it will be *incurred in the future*. If a cost is the same for each option, including it in the decision only wastes time and increases the possibility for simple errors. Costs that have already been incurred or committed are irrelevant because there is no longer any discretion about them.

### Differential Cost & Incremental cost

A **differential cost** is a cost that differs for each decision option and is therefore relevant for the decision maker's choice. In practice, another term is often used interchangeably with differential cost called Incremental cost and it is the additional cost inherent in a given decision.

EXAMPLE: A company must choose between introducing two new product lines. The incremental choice of the first option is the initial investment of \$1.5 million; the incremental choice of the second option is the initial investment of \$1.8 million. The differential cost of the two choices is \$300,000.

### Opportunity Cost (Implicit cost)

**Opportunity cost** is the benefit lost when choosing one option precludes receiving the benefits from an alternative option.

For example, if a sales manager chooses to forgo an order from a new customer to ensure that a current customer's order is filled on time, the potential profit from the lost order is the manager's *opportunity cost* for this decision.

The opposite of the opportunity cost is the outlay costs (explicit, accounting, or out-of-pocket costs) that require actual cash disbursements.

### Sunk Cost

**Sunk costs** are costs that have been incurred or committed in the past and are therefore irrelevant because the decision maker no longer has discretion over them.

For example, if a company purchased a new machine without warranty that failed the next day, the purchase price is *irrelevant* for the present decision to replace or to repair the machine.



**Avoidable vs. Committed** (establish the current level of operating capacity/ typically fixed costs)

**Avoidable costs** are those that may be eliminated by not engaging in an activity or by performing it more efficiently. An example is direct materials cost, which can be saved by ceasing production.

**Committed costs**

- Committed costs are Costs which are **governed mainly by past decisions** that established the present levels of operating and organizational capacity and which only change slowly in response to small changes in capacity.
- Committed costs are those which are required as a result of past decisions and cannot be altered in the short run.
- Committed costs arise from holding property, plant, and equipment.

Examples are insurance, real estate taxes, Long-term lease payments, and depreciation. They are by nature long-term and cannot be reduced by lowering the short-term level of production.

**Engineered vs. Discretionary**

**Engineered costs** are those having a direct, observable, quantifiable cause-and effect relationship between the level of output and the quantity of resources consumed.

Examples are direct materials and direct labor.

**Discretionary costs**

- are those characterized by an uncertainty in the degree of causation between the level of output and the quantity of resources consumed.
- They tend to be the subject of a periodic (e.g., annual) outlay decision.
- “Discretionary costs” are costs which: Management decides to incur in the current period to enable the company to achieve objectives other than the filling of orders placed by customers.
- Costs that arise from periodic budgeting decisions that have no strong input-output relationship are commonly called Discretionary costs.

Examples are advertising and R&D costs

## Other COST CLASSIFICATION

**Joint vs. Separable**

- Often a manufacturing process involves processing a single input up to the point at which multiple end products become separately identifiable, called the split-off point.
- **Joint costs** are those costs incurred before the split-off point, i.e., since they are not traceable to the end products, they must be allocated.
- **Separable costs** are those incurred beyond the split-off point, i.e., once separate products become identifiable.
- **By-products** are products of relatively small total value that are produced simultaneously from a common manufacturing process with products of greater value and quantity (joint products).
- An example is petroleum refining. Costs incurred in bringing crude oil to the fractionating process are joint costs.



## Normal vs. Abnormal Spoilage

- **Normal spoilage** is the spoilage that occurs under normal operating conditions. It is essentially uncontrollable in the short run, since normal spoilage is expected under efficient operations, it is treated as a product cost, that is, it is absorbed into the cost of the good output.
- **Abnormal spoilage** is spoilage that is not expected to occur under normal, efficient operating conditions. The cost of abnormal spoilage should be separately identified and reported to management,
- When compared with normal spoilage, abnormal spoilage: Is generally thought to be **more controllable** by production management than normal spoilage.

Abnormal spoilage is typically treated as a period cost (**a loss account**) because of its unusual nature. Abnormal spoilage should be charged to in the period that detection of the spoilage occurs

## Rework, Scrap, and Waste

- **Rework** consists of end products that do not meet standards of salability but can be brought to salable condition with additional effort, the decision to rework or discard is based on whether the marginal revenue to be gained from selling the reworked units exceeds the marginal cost of performing the rework.
- **Scrap** consists of raw material left over from the production cycle but still usable for purposes other than those for which it was originally intended, Scrap may be used for a different production process or may be sold to outside customers, usually for a nominal amount.
- **Waste** consists of raw material left over from the production cycle for which there is no further use, Waste is not salable at any price and must be discarded.

## Other Costs

- **Carrying costs** are the costs of storing or holding inventory. Examples include the cost of capital, insurance, warehousing, breakage, and obsolescence.
- **Transferred-in costs** are those incurred in a preceding department and received in a subsequent department in a multi-departmental production setting.
- **Value-adding costs** are the costs of activities that cannot be eliminated without reducing the quality, responsiveness, or quantity of the output required by a customer or the organization.

## Capacity levels Denominator-level capacity choices

Capacity levels can be measured in terms of

- what a plant can supply-theoretical capacity or practical capacity.
- demand for the output of a plant-normal capacity utilization or master-budget capacity utilization.

## What a plant can supply

**Theoretical capacity** (ideal goal of capacity usage)

- based on producing at full efficiency all the time.
- does not allow for any plant maintenance, interruptions because of bottle breakage on the filling lines, or any other factor.
- is unattainable in the real world as it assume continuous operations with no holidays, downtime, etc.



### Practical capacity

- is the level of capacity that reduces theoretical capacity by unavoidable operating interruptions, such as scheduled maintenance time, shutdowns for holidays, so it allows for unavoidable delays in production for maintenance, holidays, etc.
- is the maximum level at which output is produced efficiently.
- Is the upper limit of a company's productive output capacity given its existing resources.
- Use of practical capacity as a denominator value usually results in underapplied overhead because it always exceeds the actual level of use (U.7)

### Capacity levels in terms of demand

In contrast, normal capacity utilization and master budget capacity utilization measure capacity levels in terms of demand for the output of the plant - the amount of the available capacity that the plant **expects to use** based on the demand for its products. In many cases, budgeted demand is well below the production capacity available.

#### Normal capacity utilization

- is the long-term average level of capacity utilization that satisfies average customer demand over a period (say, 2 to 3 years) that includes seasonal, cyclical, and trend factors. Deviations in a given year will be offset in subsequent years.

#### Master-budget capacity utilization

- is expected level of capacity utilization for the current budget period, typically one year.

These two capacity utilization levels can differ-for example, when an industry has cyclical periods of high and low demand or when management believes that the budgeted production for the coming period is not representative of long-run demand.

## Costing Techniques

The rest of the current chapter provides you with a brief explanation with the various topics that will be studied in more details in the rest of the current part, the major topics are:

1. Inventory Costing: absorption costing (AC) Vs. variable costing (VC), (Ch.5)
2. Cost Accumulation, Cost Measurement and Overhead Assignment in traditional costing system and in ABC. (Ch.4& 5)
3. Cost Allocation (Ch .5)
  - a. Allocating joint costs
  - b. Allocating service department costs
4. Standard Costing, Flexible Budgeting, and Variance Analysis (Ch.7)
5. Target costing :market price of the product is taken as a given.(P2 CMA)



# PART 1

# Financial Planning, Performance and Control

## C. Cost Management (25% - Levels A, B, and C)

Job costing (Cost accumulation method) with Actual costing (Cost measurement method)

Job costing (Cost accumulation method) with Normal Costing (Cost measurement method) & End-of-Accounting- Year Adjustments

ACTUAL/NORMAL/STANDARD COSTS

TRADITIONAL COSTING SYSTEMS (single & departmental) Vs. ABC



## STUDY UNIT FIVE COST ACCUMULATION SYSTEMS

### INTRODUCTION

**Product costing** is the process of accumulating, classifying, and assigning direct materials, direct labor, and factory overhead costs to products or services.

Product costing provides useful cost information for both manufacturing and nonmanufacturing firms for

- (1) product and service cost determination and inventory measurement,
- (2) management planning, cost control, and performance evaluation, and
- (3) strategic and operational decision making.

**Several different types of product costing systems are available;** these include :

- (1) **Cost accumulation method**-job or process costing systems,
- (2) **Cost measurement method**-actual, normal, or standard costing systems, and
- (3) **Overhead assignment method**-traditional or activity-based costing systems.

**The choice of a particular system depends on**

- (1) the nature of the industry and the product or service,
- (2) the firm's strategy and management information needs, and
- (3) the costs and benefits of acquiring, designing, modifying, and operating a particular system.

Cost accumulation systems represent the manner in which the accounting system develops costs. The system is modified by the cost object involved. Most commonly tested cost accumulation systems are job order costing and process costing,

- if the cost object is a custom order, **job costing** may be used, and
- if the cost object is a mass produced homogeneous product (e. g., steel), **process costing** using average costs would be used.
- Further, there are many variations of cost accumulation systems-those that use components of both job order costing and process costing (e. g., **operations costing**), and
- those that account for certain costs at the end of the process (e. g., **back flush costing**) because there is little need for in- process inventory valuation.
- Other systems (e. g., **life cycle costing**) seek to monitor costs throughout the product's life cycle and expand on the traditional costing systems that focus only on the manufacturing phase of a product's life.
- Finally, the assignment of costs to cost objects may occur using a variety of cost drivers (or allocation bases). **Activity- based costing** is an approach that assists in the assignment of costs, regardless of the cost accumulation system used.



# **JOB ORDER COSTING (COST ACCUMULATION SYSTEM)**





### III. JOB ORDER COSTING (COST ACCUMULATION SYSTEM)

Job-order costing is the method of product costing that identifies the job (or individual units or batches) as the cost objective and is used when there are relatively few units produced and when each unit is unique or easily identifiable.

#### Cost Accumulation: Job or Process Costing?

Exhibit 12-1 Differences between Job and Process Costing	
Job Costing	Process Costing
Costs accumulated by job	Costs accumulated by process or department
Production of wide variety of heterogeneous products or services	Mass production of homogeneous products or services
Unit cost computed by dividing total job costs by number of units produced or served at the end of the job	Unit cost computed by dividing the total process costs of the period by number of units produced or served at end of the period

#### Cost Measurement: Actual, Normal, or Standard Costing?

Costing System	Types of Cost Used For		
	Direct Materials	Direct Labor	Factory Overhead
Actual costing	Actual cost	Actual cost	Actual cost
Normal costing	Actual cost	Actual cost	Estimated overhead cost (using predetermined rate(s))
Standard costing	Standard cost	Standard cost	Standard cost

#### A. COST OBJECTIVE IS THE JOB (OR UNIT)

Under job order costing, cost is allocated to a specific job as it moves through the manufacturing process.

Record keeping for job-costing emphasizes the job as the cost objective.

Job-cost systems are best suited for customized production environments such as construction, aircraft assembly, printing, etc. A new job-cost record would be started every time a new job (building project, airplane or print job) is started.

#### B. JOB COST RECORDS

Job-cost records are maintained for each product, service, or batch of products, and they serve as the primary records used to accumulate all costs for the job. Job-cost records are also referred to as job-cost sheets or job orders. Job-cost records accumulate data from the following internal documents:

##### 1. Materials Requisitions

Materials requisitions are documents that show the materials requested for use on the job.

##### 2. Labor Time Tickets (Time Cards)

Labor time tickets (time cards) are documents that show the labor hours and labor rate associated with the time applied to the job.

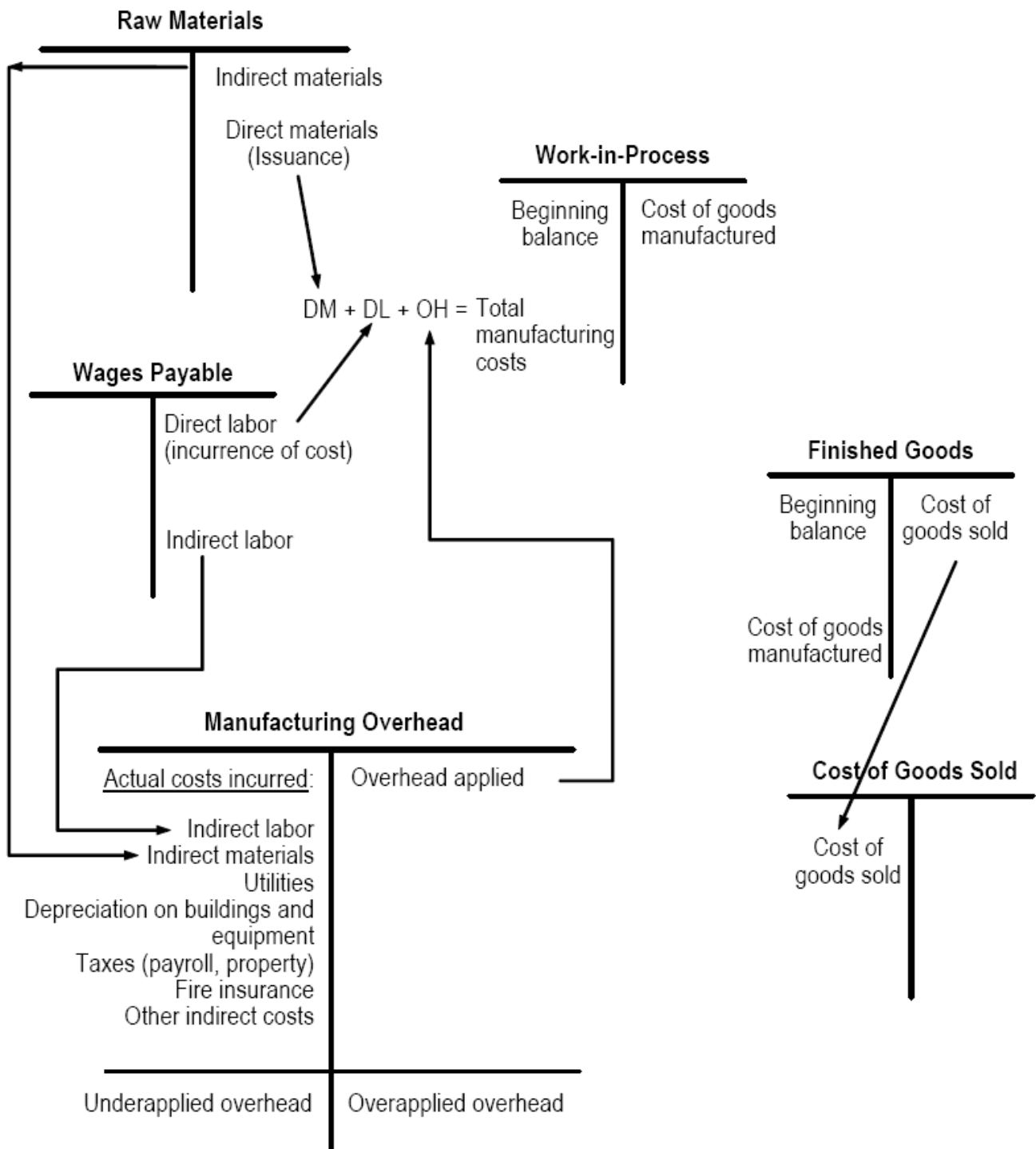
##### 3. Overview of Job Order Costing

Job-costing systems require a limited number of work-in-process accounts.



Pictorial Overview

Job Order Costing



**PASS KEY**

Application of overhead is accomplished in two steps:

Step #1: Calculate Overhead Rate = Budgeted Overhead Costs ÷ Estimated Cost Driver

Step #2: Apply Overhead = Actual Cost Driver x Overhead Rate (from Step #1)



# Supplementary REQUIRED HOMEWORK READING: JOB COSTING BASED ON ICMA SUGGESTED READING LIST



### Comprehensive example (Robinson Company):

Robinson Company: manufacture and install specialized machinery for the paper-making industry.

The specific job we will focus on is the manufacture and installation of a small pulp machine, which converts wood to pulp, for Western Pulp and Paper Company in 2003.

Based on a cost estimate, Robinson prices the job at \$15,000.

### Job costing (Cost accumulation method) with actual costing (Cost measurement method)

Consider Robinson's *actual costing* system, a job-costing system that uses *actual costs* to determine the cost of individual jobs.

Actual costing is a costing method that:

- traces direct costs to a cost object by using the actual direct-cost rates times the actual quantity of the direct-cost inputs.
- It allocates indirect costs based on the actual indirect-cost rates times the actual quantity of the cost-allocation bases.

### General Approach to Job Costing

**Step 1:** Identify the Job That Is the Chosen Cost Object.: Job WPP 298, manufacturing a pulp machine for the Western Pulp and Paper Company in 2006.

**Step 2:** Identify the Direct Costs of the Job.

- **Direct materials:** :The total actual direct material cost is \$4,606,
- **Direct manufacturing labor T:** The total direct manufacturing labor costs of \$1,579 for the pulp machine.

**Step 3:** Select the Cost-Allocation Bases to Use for Allocating Indirect Costs to the Job: **Robinson, however, chooses direct manufacturing labor-hours as the sole allocation base for linking all indirect manufacturing costs to jobs.**

### Cause-and-effect relationship

There is a strong cause-and-effect relationship between the direct manufacturing labor-hours required by an individual job-that's the cause-and the indirect manufacturing resources demanded by that job that's the effect. In 2006, Robinson records 27,000 actual direct manufacturing labor-hours.

**Step 4:** Identify the Indirect Costs Associated with Each Cost-Allocation Base. Robinson believes that a single cost-allocation base-direct manufacturing labor-hours-can be used to allocate indirect manufacturing costs to jobs. Robinson creates a **single cost pool** called manufacturing overhead costs. In 2006, actual manufacturing overhead costs total \$1,215,000.

**Step 5:** Compute the Rate per Unit of Each Cost-Allocation Base Used to Allocate Indirect Costs to the Job.

For each cost pool, the actual indirect-cost rate is calculated by dividing total indirect costs in the pool (determined in step 4) by the total quantity of the cost-allocation base (determined in step 3). Robinson calculates the allocation rate for its single manufacturing overhead cost pool as follows

$$\text{Actual manufacturing overhead rate} = \frac{\text{Actual manufacturing overhead costs}}{\text{Actual total quantity of cost-allocation base}}$$



$$\$1,215,000 \div 27,000 \text{ direct manufacturing labor-hours} = \$45 \text{ per direct manufacturing labor-hour}$$

**Step 6: Compute the Indirect Costs Allocated to the Job.** The indirect costs of a job are computed by multiplying the actual quantity of each different allocation base (one allocation base for each cost pool) associated with the job by the indirect-cost rate of each allocation base (computed in step 5).

To make the pulp machine, Robinson uses 88 direct manufacturing labor-hours, the cost-allocation base for its only manufacturing overhead cost pool (out of the 27,000 total direct manufacturing labor-hours for 2006).

Manufacturing overhead costs allocated to the pulp machine job equal \$3,960

$$(\$45 \text{ per direct manufacturing labor-hour} \times 88 \text{ hours}) = \$3,960$$

**Step 7: Compute the Total Cost of the Job by Adding All Direct and Indirect Costs Assigned to the Job** the total manufacturing costs of the Western Pulp job are \$10,145

**Direct manufacturing costs**

Direct materials	\$4,606	
Direct manufacturing labor	\$1,579	\$6,185

**Manufacturing overhead costs**

(\$45 per direct manuf. labor –hour x 88hours) 3,960

**Total manufacturing costs of job** **\$10,145**

Recall, Robinson was paid \$15,000 for the job. With that revenue, the actual-costing system shows a gross margin of \$4,855 (\$15,000 - \$10,145) and a gross-margin percentage of 32.4% (\$4,855 ÷ \$15,000 = 0.324).

**Job costing (Cost accumulation method) with Normal Costing (Cost measurement method)**

The difficulty of calculating actual indirect-cost rates on a weekly or monthly basis means managers **cannot** calculate the actual costs of jobs as they are completed. However, managers want a close approximation of the manufacturing costs of various jobs regularly during the year, not just at the end of the fiscal year. Managers want manufacturing costs (and other costs, such as marketing costs) for ongoing uses, including pricing jobs, monitoring **and managing costs, and preparing interim financial statements. Because of the benefits of immediate access to job costs, few companies wait until the actual manufacturing overhead** is finally known (at year-end) before allocating overhead costs to compute job costs.

Instead, a *predetermined* or *budgeted* indirect-cost rate is calculated for each cost pool at the beginning of a fiscal year, and overhead costs are allocated to jobs as work progresses. For the numerator and denominator reasons already described, for each cost pool, the **budgeted indirect-cost rate is computed as follows:**

$$\text{Budgeted Indirect-Cost Rate} = \frac{\text{Budgeted annual indirect costs}}{\text{Budgeted annual quantity of the cost-allocation base}}$$



Using budgeted indirect-cost rates gives rise to normal costing.

Normal costing is a costing system that:

- **traces** direct costs to a cost object by using the actual direct-cost rates times the actual quantities of the direct-cost inputs and that
- **allocates** indirect costs based on the budgeted indirect-cost rates times the actual quantities of the cost-allocation bases.

Both actual costing and normal costing trace direct costs to jobs in the same way.

The actual quantities and actual rates of direct materials and direct manufacturing labor used on a job are known from the source documents as the work is done. The only difference between actual costing and normal costing is that actual costing uses *actual* indirect-cost rates, whereas normal costing uses *budgeted* indirect-cost rates to cost jobs.

#### Actual costing vs. Normal costing.

	<u>Actual Costing</u>	<u>Normal Costing</u>
Direct Costs	<i>Actual direct-cost rates x</i> actual quantities of direct-cost inputs	<i>Actual direct-cost rates x</i> actual quantities of direct-cost inputs
Indirect Costs	<i>Actual indirect-cost rates x</i> actual quantities of cost-allocation bases	<i>Budgeted indirect-cost rates x</i> actual quantities of cost-allocation bases

We illustrate normal costing for the Robinson Company example using the seven-step procedure. The following budgeted data for 2006 are for its manufacturing operations

	<u>Budget</u>
Total manufacturing overhead costs	\$1,120,000
Total direct manufacturing labor-hours	28,000

Steps 1 and 2 are exactly as before: Step 1 identifies WPP 298 as the cost object; Step 2 calculates actual direct material costs of \$4,606, and actual direct manufacturing labor costs of \$1,579. Recall from Step 3 that Robinson uses a single cost-allocation base, direct manufacturing labor-hours, to allocate all manufacturing overhead costs to jobs. The budgeted quantity of direct manufacturing labor-hours for 2006 is 28,000 hours. In Step 4, **Robinson groups all the indirect manufacturing costs into a single** manufacturing overhead cost pool. In Step 5, the budgeted manufacturing overhead rate for 2006 is calculated as

Budgeted manufacturing overhead rate = Budgeted manufacturing overhead costs ÷ Budgeted total quantity of cost-allocation base

= \$ 1,120,000 ÷ 28,000 direct manufacturing labor-hours DMLH

= **\$40** per direct manufacturing labor-hour.



In Step 6, under a normal-costing system,

Manufacturing overhead costs= Budgeted manufacturing X *Actual quantity* of direct  
allocated to WPP 298 overhead rate manufacturing labor-hours

= \$40 per direct manufacturing labor-hour X 88 direct manufacturing labor-hours

In Step 7, the cost of the job under normal costing is \$9,705, calculated as

Direct manufacturing costs

Direct materials	\$4,606	
Direct manufacturing labor	1,579	\$6,185

Manufacturing overhead costs

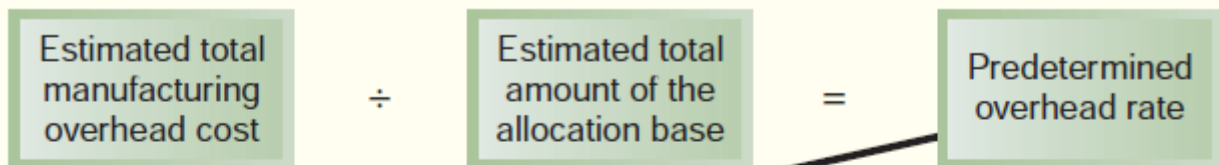
(\$40 x 88 actual direct manufacturing labor-hours)	3,520
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<b>Total manufacturing costs of job</b>	<b><u>\$9,705</u></b>
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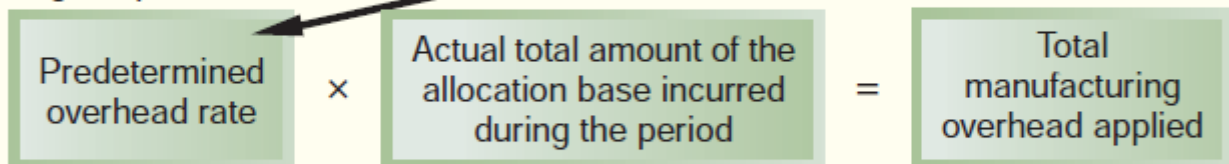
The manufacturing cost of the WPP 298 job is lower by \$440 under normal costing (\$9,705) than it is under actual costing (\$10,145) because the budgeted indirect-cost rate is \$40 per hour, whereas the actual indirect-cost rate is \$45 per hour. That is, (\$45 - \$40) x 88 actual direct manufacturing labor-hours = \$440.

As we discussed previously, manufacturing costs of a job are available much **earlier** under a normal-costing system. Consequently, Robinson's manufacturing and sales managers can evaluate the profitability of different jobs, the efficiency with which the jobs are done, and the pricing of different jobs as soon as the jobs are completed, while the experience is still fresh in everyone's mind. Another advantage of normal costing is that corrective actions can be implemented much sooner.

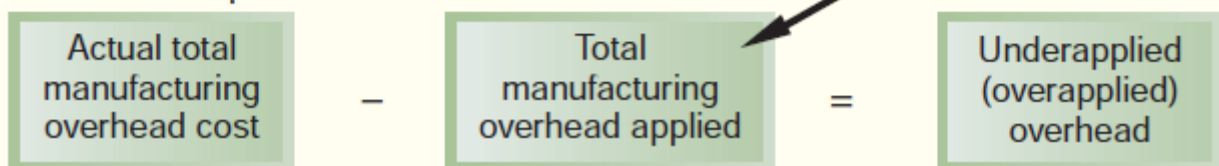
At the beginning of the period:



During the period:



At the end of the period:







### Budgeted Indirect Costs and End-of-Accounting- Year Adjustments

Using budgeted indirect-cost rates and normal costing instead of actual costing has the advantage that indirect costs can be assigned to individual jobs on an ongoing and timely basis, rather than only at the end of the fiscal year when actual costs are known.

However, budgeted rates are unlikely to equal actual rates because they are based on estimates made **up to 12 months before actual costs are incurred**. We now consider adjustments that need to be made when, at the end of the fiscal year, indirect costs allocated differ from actual **indirect costs incurred**. Recall that for the **numerator and denominator reasons discussed** earlier, we do *not* expect actual overhead costs incurred each month to equal overhead costs allocated each month.

- ✚ **Underallocated** indirect costs (a debit balance in overhead applied) occur when the allocated amount of indirect costs in an accounting period is less than the actual (incurred) amount, because (a) Activity level was lower than expected, or (b) Actual overhead costs were higher than expected.
- ✚ **Overallocated** indirect costs (a credit balance in overhead applied) occur when the allocated amount of indirect costs in an accounting period is greater than the actual (incurred) amount because (a) activity level was higher than expected, or (b) Actual overhead costs were lower than expected.

- ✓ Underallocated (overallocated) indirect costs are also called underapplied (overapplied) indirect costs and underabsorbed (overabsorbed) indirect costs.
- **Underallocated (overallocated) indirect costs = Indirect costs incurred - Indirect costs allocated.**

Consider the manufacturing overhead indirect-cost pool at Robinson Company. There are two indirect-cost accounts in the general ledger that have to do with manufacturing overhead:

1. **Manufacturing Overhead Control**, the record of the actual costs in all the individual overhead categories (such as indirect materials, indirect manufacturing labor, supervision, engineering, power, and plant depreciation)
2. **Manufacturing Overhead Allocated**, the record of the manufacturing overhead allocated to individual jobs on the basis of the budgeted rate multiplied by actual direct manufacturing labor-hours

Assume the following annual data for the Robinson Company:

Dr	Manufacturing Overhead Control		Manufacturing Overhead Allocated	Cr
	Bal. Dec. 31, 2006 <b>1,215,000</b>			Bal Dec. 31, 2006 <b>1,080,000</b>

The \$1,080,000 credit balance in Manufacturing Overhead Allocated results from multiplying the 27,000 actual direct manufacturing labor-hours worked on all jobs in 2006 by the budgeted rate of \$40 per direct manufacturing labor-hour.

The \$135,000 difference (a net debit) is an underallocated amount because actual manufacturing overhead costs are **greater than the allocated amount**. This difference arises from two reasons related to the computation of the \$40 budgeted hourly rate:

1. Numerator reason (indirect-cost pool). Actual manufacturing-overhead costs of \$1,215,000 are greater than the budgeted amount of \$1,120,000.





2. Denominator reason (quantity of allocation base). Actual direct manufacturing labor-hours of 27,000 are fewer than the budgeted 28,000 hours.

There are three main approaches to accounting for the \$135,000 underallocated manufacturing overhead caused by Robinson underestimating manufacturing overhead costs and overestimating the quantity of the cost-allocation base:

- (1) adjusted allocation rate approach,
- (2) proration approach, and
- (3) write-off to cost of goods sold approach.

### (1) Adjusted Allocation-Rate Approach

The adjusted allocation-rate approach restates all overhead entries in the general ledger and subsidiary ledgers using actual cost rates rather than budgeted cost rates.

- First, the actual manufacturing overhead rate is computed at the end of the fiscal year.
- Then, the manufacturing overhead costs allocated to every job during the year are recomputed using the actual manufacturing overhead rate (rather than the budgeted manufacturing overhead rate).
- Finally, end-of-year closing entries are made.

The result is that at year-end, every job-cost record and finished goods record-as well as the ending Work-in-Process Control, Finished Goods Control, and Cost of Goods Sold accounts-accurately represent actual manufacturing overhead costs incurred.

#### Consider the Robinson example.

The actual manufacturing overhead (\$1,215,000) exceeds the manufacturing overhead allocated (\$1,080,000) by 12.5% [ $(\$1,215,000 - \$1,080,000) \div \$1,080,000$ ].

The actual 2006 manufacturing overhead rate is \$45 per direct manufacturing labor-hour ( $\$1,215,000 \div 27,000$  hours) rather than the budgeted \$40 per direct manufacturing labor-hour. At year-end, Robinson could increase the manufacturing overhead allocated to each job in 2006 by 12.5% using a single software command. The command would adjust both the subsidiary ledgers and the general ledger. Consider the Western Pulp machine job, WPP 298. Under normal costing, the manufacturing overhead allocated to the job is \$3,520 (the budgeted rate of \$40 per direct manufacturing labor-hour x 88 hours). Increasing the manufacturing overhead allocated by 12.5%, or \$440 ( $\$3,520 \times 0.125$ ), means the adjusted amount of manufacturing overhead allocated to Job WPP 298 equals \$3,960 ( $\$3,520 + \$440$ ).

Note under actual costing, manufacturing overhead allocated to this job is also \$3,960 (the actual rate of \$45 per direct manufacturing labor-hour x 88 hours). Making this adjustment under normal costing for each job in the subsidiary ledgers ensures that all \$1,215,000 of manufacturing overhead is allocated to jobs.

The adjusted allocation-rate approach yields the benefits of both the *timeliness and convenience of normal costing during the year and the accuracy of actual costing at year-end*. Each individual job-cost record and the end-of-year account balances for inventories and cost of goods sold are adjusted to actual costs.

### (2) Proration Approach

Proration spreads underallocated overhead or overallocated overhead among:

- ending work in process,
- finished goods, and
- cost of goods sold.

Materials inventory is not  
included in this proration



In our Robinson example, end-of-period proration is made to the ending balances in Work-in-Process Control, Finished Goods Control, and Cost of Goods Sold. Assume the following actual results for Robinson Company in 2006:

Account	Account Bal. (Before proration)	Allocated MOH Included in each Account Bal. (Before proration)
WIP Control	\$50,000	\$16,200
FG Control	\$75,000	\$31,320
COGS Control	<u>\$2,375,000</u>	<u>\$1,032,480</u>
	<u><b>\$2,500,000</b></u>	<u><b>\$1,080,000</b></u>

### How should Robinson prorate the underallocated \$135,000 of manufacturing overhead at the end of 2006?

Robinson should prorate underallocated or overallocated amounts on the basis of the total amount of manufacturing overhead allocated (before proration) in the ending balances of Work-in-Process Control, Finished Goods Control, and Cost of Goods Sold. The \$135,000 underallocated overhead is prorated over the three affected accounts in proportion to their total amount of manufacturing overhead allocated (before proration) in column 2 of the following table, resulting in the ending balances (after proration) in column 5 at actual costs.

	A	B	C	D	E	F	G
		Account Balance (Before Proration)	Allocated Manufacturing Overhead Included in Each Account Balance (Before Proration)	Allocated Manufacturing Overhead Included in Each Account Balance as a Percent of Total	Proration of \$135,000 of Underallocated Manufacturing Overhead		Account Balance (After Proration)
10							
11	Account	(1)	(2)	(3) = (2) / \$1,080,000	(4) = (3) x \$135,000		(5) = (1) + (4)
12	Work-in-process control	\$ 50,000	\$ 16,200	1.5%	0.015 x \$135,000 =	\$ 2,025	\$ 52,025
13	Finished goods control	75,000	31,320	2.9%	0.029 x 135,000 =	3,915	78,915
14	Cost of goods sold	<u>2,375,000</u>	<u>1,032,480</u>	<u>95.6%</u>	0.956 x 135,000 =	<u>129,060</u>	<u>2,504,060</u>
15	Total	<u><b>\$2,500,000</b></u>	<u><b>\$1,080,000</b></u>	<u><b>100.0%</b></u>		<u><b>\$135,000</b></u>	<u><b>\$2,635,000</b></u>

MOH Allocated is \$135,000 less than MOH Control. That is, MOH Allocated is *under allocated*. Its balance is smaller than the balance of MOH Control.

This understated MOH Allocated flowed into Work-in-Process Control, which in turn flowed into Finished Goods Control and Cost of Goods Sold. Because all three of these accounts are understated, they would be increased under the proration approach.

Recall that the actual manufacturing overhead (\$1,215,000) exceeds the manufacturing overhead allocated (\$1,080,000) by 12.5%. The proration amounts in column 3 can also be derived by multiplying the balances in column 2 by 0.125. For example, the \$3,915 proration to Finished Goods is  $0.125 \times \$31,320$ . The journal entry to record this proration is

Work-in-Process Control	2,025	
Finished Goods Control	3,915	
Cost of Goods Sold	129,060	
Manufacturing Overhead Allocated	1,080,000	
Manufacturing Overhead Control		1,215,000



If manufacturing overhead had been overallocated, the work-in-Process, Finished Goods, and Cost of Goods Sold accounts would be decreased (credited) instead of increased (debited).

This journal entry restates the 2006 ending balance for work-in-process Control, Finished Goods Control, and cost of Goods Sold to what they would have been if actual manufacturing overhead rates had been used rather than budgeted manufacturing overhead rates. this method reports the same 2006 ending balances in the general ledger as the adjusted allocation-rate approach.

Some companies use the proration base but base it on the column 1 amounts of the preceding table-that is, the ending balance of work-in-process Control, Finished Goods Control, and cost of Goods Sold before proration. It gives the same result as the previous proration only if the proportions of manufacturing overhead costs to total costs, and therefore direct costs, are the same in the Work-in-Process Control, Finished Goods Control, and Cost of Goods Sold accounts. In general, the proportion of direct costs to manufacturing overhead costs in the various accounts are not the same. That's because manufacturing overhead is usually allocated using a cost-allocation base such as direct manufacturing labor-hours rather than direct costs.

The following table shows that prorations based on ending account balances will not be the same as the more-accurate prorations calculated earlier based on the amount of manufacturing overhead allocated to the accounts.

	A	B	C	D	E	F
		Account Balance (Before Proration)	Account Balance as a Percent of Total	Proration of \$135,000 of Underallocated Manufacturing Overhead		Account Balance (After Proration)
1						
2	Account	(1)	(2) = (1) / \$2,500,000	(3) = (2) x \$135,000		(4) = (1) + (3)
3	Work-in-process control	\$ 50,000	2.0%	0.02 x \$135,000 =	\$ 2,700	\$ 52,700
4	Finished goods control	75,000	3.0%	0.03 x 135,000 =	4,050	79,050
5	Cost of goods sold	2,375,000	95.0%	0.95 x 135,000 =	128,250	2,503,250
6	Total	<u>\$2,500,000</u>	<u>100.0%</u>		<u>\$135,000</u>	<u>\$2,635,000</u>

However, proration based on ending balances is frequently justified as being an expedient way of approximating the more accurate results from using indirect costs allocated.

### (3) Write-Off to Cost of Goods Sold Approach

Under this approach, the total under- or overallocated manufacturing overhead is included in this year's Cost of Goods Sold. For Robinson, the journal entry would be:

Cost of Goods Sold	135,000
Manufacturing Overhead Allocated	1,080,000
Manufacturing Overhead Control	1,215,000

Robinson's two Manufacturing Overhead accounts are closed with the difference between them included in cost of goods sold. The Cost of Goods Sold account after the write-off equals \$2,510,000, the balance before the write-off of \$2,375,000 plus the underallocated manufacturing overhead amount of \$135,000.



If Factory Overhead is . . .	<u>Alternative 1</u> Allocation	<u>Alternative 2</u> Close to Cost of Goods Sold
<b>UNDERAPPLIED</b> (Applied OH is less than actual OH)	<b>INCREASE</b> Work in Process Finished Goods Cost of Goods Sold	<b>INCREASE</b> Cost of Goods Sold
<b>OVERAPPLIED</b> (Applied OH is greater than actual OH)	<b>DECREASE</b> Work in Process Finished Goods Cost of Goods Sold	<b>DECREASE</b> Cost of Goods Sold

- ✚ Proration should be based on the manufacturing overhead allocated component in the ending balances of Work-in-Process Control, finished Goods Control and Cost of Goods Sold. This proration method results in the most accurate inventory and Cost of Goods Sold numbers being reported in the financial statements.
- ✚ Prorating to each individual job (as in the adjusted allocation-rate approach) is useful if the goal is to develop the most accurate record of individual job costs for profitability analysis purposes.
- ✚ The write-off to Cost of Goods Sold is the simplest approach for dealing with under or overallocated overhead. If the amount of under- or overallocated overhead is small-in comparison with total operating income or some other measure of materiality-the write off to Cost of Goods Sold approach yields a good approximation to more-accurate, but more-complex, approaches.



# **TRADITIONAL COSTING SYSTEMS**

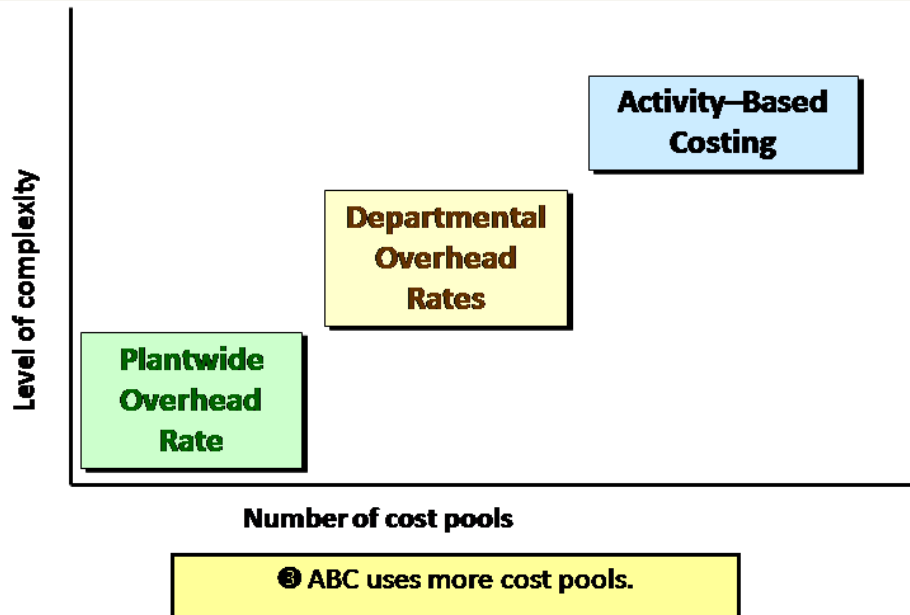
## **(single & departmental) Vs. ABC**

### **(COST ALLOCATION SYSTEMS)**



## TRADITIONAL COSTING SYSTEMS (single & departmental) Vs. ABC

"Best practice" ABC differs from traditional costing in five ways.



### LIMITATIONS OF TRADITIONAL COSTING SYSTEMS

For example, Dole Company has two factories Alpha and Beta. Alpha is a highly automated factory; Beta is a labor-intensive factory. The company has budgeted the following information for the year:

## Single Plant-wide Overhead Rate

Dole Company has two factories Alpha and Beta. Alpha is a highly automated factory while Beta is a labor-intensive factory. The company uses a single plant-wide overhead rate based upon labor hours.

Annual Budget Data	Alpha Division	Beta Division	Total
Budgeted overhead	\$ 400,000	\$ 200,000	\$ 600,000
Budgeted labor hours	10,000	50,000	60,000
Budgeted machine hours	20,000	40,000	24,000

$$\text{Single Plant-wide Overhead Rate} = \frac{\$600,000}{60,000} = \$10 \text{ per labor hour}$$



During the first month of operations the company has the following information for its two products Widget and Gidget

	Alpha Division	Beta Division
<b>Widget:</b>		
Labor hours	500	4,000
Machine hours	800	200
<b>Gidget:</b>		
Labor hours	500	1,000
Machine hours	1,200	400

Using the plant-wide rate, factory overhead is applied to the two products as shown below.

	Widget	Gidget
<b>Alpha:</b>		
\$10 x 500	\$ 5,000	
\$10 x 500		\$ 5,000
<b>Beta:</b>		
\$10 x 4,000	40,000	
\$10 x 1,000		10,000
Overhead applied	<u>\$ 45,000</u>	<u>\$ 15,000</u>

To obtain more accurate product-costing information, assume that Dole Company decides to use two cost drivers, i.e., two separate departmental overhead rates for overhead costs, with a machine-hour-based rate for Alpha and a labor-hour-based rate for Beta. The departmental predetermined overhead cost driver rates are calculated as follows:





## Departmental Overhead Rates

To obtain more accurate product costing the company decided to use departmental overhead rates. The overhead in Alpha is to be based on machine hours, and Beta will use labor hours.

$$\text{Alpha's Departmental Overhead Rate} = \frac{\$400,000}{20,000} = \$20 \text{ per machine hour}$$

$$\text{Beta's Departmental Overhead Rate} = \frac{\$200,000}{50,000} = \$4 \text{ per labor hour}$$

Using departmental overhead rates, the factory overhead cost assigned to the two products follows:

	Widget	Gidget
Alpha: (cost driver: machine-hours)		
\$20 × 800	\$16,000	
\$20 × 1,200		\$24,000
Beta: (cost driver: labor-hours)		
\$4 × 4,000	16,000	
\$4 × 1,000		4,000
Total overhead applied	<u>\$32,000</u>	<u>\$28,000</u>

The preceding calculations show that the applied overhead costs with the single plantwide overhead cost driver rate are \$13,000 (\$45,000 - \$32,000) higher for Widget and \$13,000 (\$15,000 - \$28,000) lower for Gidget than had the firm used the two departmental overhead rates. Gidget requires considerably more machine-hours than Widget, but the overhead cost allocation to products with the single plantwide overhead cost driver rate does not consider these differences. Use of departmental rates causes product cost to more accurately reflect the different amount of labor and the different types of machinery and labor involved in producing the two products.

Departmental rates, however, do not consider the varying overhead costs of different processes or activities; within a department because some factory overhead costs are not volume based. For example, machine setup cost, product design cost, purchase ordering cost, and materials handling cost are not directly related to either direct labor-hours or machine-hours. The traditional volume-based plantwide and departmental cost driver rate overhead allocation methods can lead to inaccurate product costing.





# ACTIVITY-BASED COSTING

## (Transaction-based costing)



## ACTIVITY-BASED COSTING (transaction-based costing)

### Definition

- Activity-based costing (ABC) is defined as a cost accounting system that is based on activity level as the fundamental cost object. Activity-based costing is also referred to as transaction-based costing. The cost driver is typically the number of transactions involved in a particular activity.

### Characteristics of ABC

- ABC applies a more focused and detailed approach than using a department or plant as the level for gathering costs.
- ABC can be part of a job order system or a process cost system.
- ABC can be used for manufacturing or service businesses.
- ABC takes a long-term viewpoint and treats production costs as variable.
- The cost driver is often a non-financial variable.
- ABC may be used for internal and external purposes (as can job order costing and process costing).
- ABC is a **refinement of an existing costing system** (job-order or process)
  - Under a traditional (volume-based) costing system, overhead is simply dumped into a single cost pool and spread evenly across all end products.
  - Under ABC, indirect costs are attached to activities that are then rationally allocated to end products.
- ABC may be used by manufacturing, service, or retailing entities.
- ABC focuses management on the **cost/benefit of activities**. Value-added activities increase the product value or service.

#### a. Value Chain (Value-added Activities)

A value chain is a series of activities in which customer usefulness is added to the product. Support activities directly support value-added activities.

#### b. Non-value Added Activities

Non-value added activities do not increase product value or service and are targeted for elimination. These types of activities (e. g. warehousing) should be eliminated.

### ABC Vs. Peanut-butter costing.

- The inaccurate averaging or spreading of indirect costs over products or service units that use different amounts of resources is called **peanut-butter costing**.
  - Peanut-butter costing results in **product-cost cross-subsidization**, the condition in which the miscosting of one product causes the miscosting of other products.
  - The peanut-butter effect of using a **traditional (i.e., volume-based) costing system** can be summarized as follows:
    - ✓ Direct labor and direct materials are traced to products or service units.
    - ✓ A single pool of indirect costs (overhead) is accumulated for a given organizational unit.
    - ✓ Indirect costs from the pool are assigned using an allocative (rather than a tracing) procedure, such as using a single overhead rate for an entire department, e.g., \$3 of overhead for every direct labor hour.
      - The effect is an *averaging of costs* that may result in significant inaccuracy when products or service units do not use similar amounts of resources.
      -



A traditional cost system assigns overhead with a single plant-wide overhead application rate or rates for operating departments. These rates are volume-based using an application basis such as direct labor hours or machine hours. **All overhead costs, however, do not fluctuate with volume.** Assigning these costs with a volume basis will distort the amount of costs assigned to various product lines. Activity-based costing attempts to correct this by emphasizing long-term product analysis.

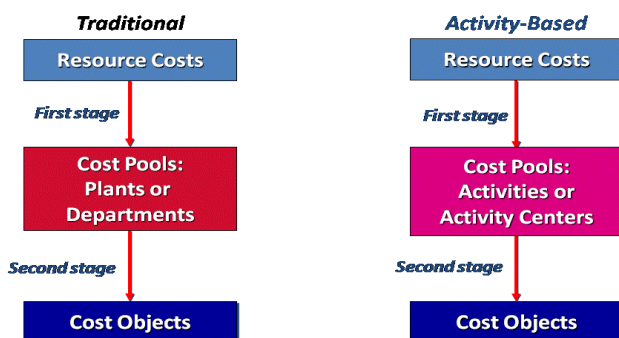
✚ **Volume-based systems**, as illustrated above, involve:

- Accumulating costs in **general ledger accounts** (utilities, taxes, etc.).
- Using a **single cost pool** to combine the costs in all the related accounts.
- Selecting a **single driver** to use for the entire indirect cost pool.
- Allocating the indirect cost pool to **final cost objects**.

✚ **Activity-based systems**, by contrast, involve(4 main steps):

- Identifying organization **activities** that constitute overhead.
  - In this step ABC team will define activities , activity cost pools and activity measures (resource cost drivers)
  - Activity cost pools will group activities according to five categories of activities (unit-level activity, batch-level activity, product-sustaining activity, facility-sustaining activity, customer-level activity)
- Assigning the costs of **resources** consumed by the activities to activity cost pools using resource cost drivers, In this step first-stage allocation will be applied ,
  - Stage one: resource cost assignment of overhead costs to activity cost pools or groups of activities called *activity centers* using appropriate resource cost drivers (here functionally organized overhead costs derived from a company's general ledger will be assigned to the activity cost pools.)
- Calculate activity rates (by dividing total cost for each activity by its *total*/activity (activity cost driver) (ex: the cost of product design cost pool will be divided by no. of designs (activity cost driver).
- Assign overhead costs to cost objects , in this step second-stage allocation will be applied,
  - Stage two: activity cost assignment of activity costs to cost objects (Product or service) using appropriate activity cost drivers.

### Two-Stage Allocation Procedures





## ABC TERMS

### Activity

An **activity** is work performed within an organization. It is also an aggregation of actions performed within an organization useful for purposes of activity-based costing.

Activities are composed of actions, movements, or work sequences.

For example, moving inventory is a warehousing activity

### Resource

A **resource** is an economic element applied or used to perform activities.

Salaries and materials, for example, are resources used in performing activities.

### Two types of cost drivers

As defined in Chapter 3, a cost driver is any factor that causes a change in the cost of an activity. It is also a measurable factor used to assign costs to activities and from activities to other activities, products, or services.

**Note; In respect to ABC, two more terms with which you need to be familiar are resource drivers and activity drivers. These are details in the allocation process and you are not expected to know this for a numerical question, but perhaps for a CMA word question.**

The two types of cost drivers are

- resource cost drivers and
- activity cost drivers.

A **resource cost driver** is a measure of the amount of resources consumed by an activity. It is the cost driver used to assign a resource cost consumed by an activity to a particular cost pool.

An example of a resource cost driver is the percentage of total square feet required to perform an activity.

An **activity cost driver** measures how much of an activity a cost object uses. It is used to assign cost pool costs to cost objects.

An example is machine hours required for the activity of running machines to produce product X.

**Activity-based costing (ABC) is a costing approach that assigns costs to products, services, or customers based on the consumption of resources caused by activities. Resources are assigned to activities, and activities are assigned to cost objects based on the activities' use.**

*ABC recognizes the causal relationships of cost drivers to activities*

### Categories of Activities

There are five categories of activities, based upon where the activity occurs in relation to the final product and the facility as a whole. These four categories are;



1. A **unit-level activity** : These activities are performed for each unit that is produced.

Examples of unit-level (volume-based or unit-based) activities include using direct materials, using direct labor-hours, inserting a component, inspecting every item, and running machines.

2. A **batch-level activity**: These activities occur each time a batch is produced rather than for each unit of production.

Examples of batch-level activities are setting up machines, placing purchase orders, scheduling production, inspecting every batch, and handling materials.

3. A **product-sustaining activity** is performed to support the production of a specific product.

Examples of product-sustaining activities include designing products, administering parts, issuing engineering change orders, and expediting.

4. A **facility-sustaining activity** is performed to support the production of products in general. Examples of facility-sustaining activities include providing security, safety, maintenance, and plant management, calculating plant depreciation, and paying property taxes.

5. A **customer-level activity** includes activities that are performed to support customer needs such as customer service, phone banks, or custom orders.

Note; Fortunately, on the CMA Exam you will generally not need to identify the cost drivers or cost pools in a large question because they will be provided for you. You will simply need to use the provided information to determine the amount of overhead that will need to be allocated to any product. In a smaller question it is possible that you will need to determine the appropriate driver, but these are usually fairly direct, and if you simply think about what would cause costs to be incurred, you will see the correct answer.

## **Benefits and Limitations of an Activity Based Costing System**

### **Benefits**

Activity-based costing helps reduce distortions caused by traditional cost allocations.

It provides a clear view of how the mix of a firm's diverse products, services, and activities contributes to the bottom line in the long run.

### **Major benefits of the activity-based costing are the following:**

1. ABC provides more accurate and informative product costs, which lead to more accurate product profitability measurements and to better-informed strategic decisions about pricing, product line, customer market, and capital expenditure.
2. ABC provides more accurate measurements of activity-driving costs, which helps managers improve product and process value by making better product design decisions, controlling costs better, and fostering various value-enhancement projects.
3. ABC provides managers easier access to relevant costs for making business decisions, enabling them to take a more competitive position



### Limitations

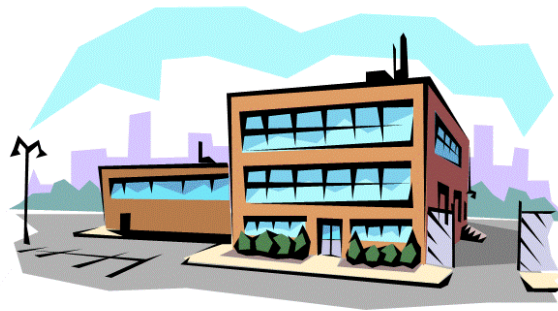
Although activity-based costing provides better tracing of costs to individual products than traditional systems, managers should be aware of its limitations before using it to calculate product costs:

1. Allocations. Even if activity data are available, some costs probably require allocations to departments and products based on arbitrary volume measures because finding a specific activity that causes the incurrence of the costs might not be practical. Examples are some of the facility-sustaining costs, such as cleaning the factory and managing the production process
2. ABC reports do not conform to GAAP, so restating financial data adds an expense and causes confusion (unsure whether to rely on the ABC or external data).
3. Expense and time. An ABC system is very expensive to develop and is very time consuming. Like most innovative management or accounting systems,
4. ABC usually requires more than a year for successful development and implementation.
5. ABC generates vast amounts of information. Too much information can mislead managers into concentrating on the wrong data.

### Comprehensive Example to compute product costs under a traditional costing system and an activity based costing system.

The following example contrasts steps 2 and 3 of the traditional costing system, using direct labor-hours as the cost driver, with the activity-based costing system, using both volume-based and non-volume-based cost drivers.

## Comparison of Traditional and Activity-Based Systems



### Northern High-Tech, Inc.

Northern High-Tech, Inc., successfully produces and sells two types of quality printers, the deluxe and the regular. Assume that the company has the following financial and cost data for the two products:



Northern High-Tech provides the following information about the two products it sells.

	Deluxe	Regular
Production volume	5,000	15,000
Selling price	\$400	\$200
Unit direct material and labor costs	\$200	\$80
Direct labor-hours	25,000	75,000

25,000 + 75,000 = 100,000

**Overhead Rate**

$$\frac{\$2,000,000}{100,000} = \$20 \text{ DLH}$$

	Budgeted Cost Pool	Activity Driver
Engineering	\$ 125,000	Engineering hours
Setups	300,000	Number of setups
Machine running	1,500,000	Machine-hours
Packing	75,000	Number of packing orders
	<u>\$2,000,000</u>	

The company's management accountant has identified the following activities, budgeted cost pools, and activity drivers:

Activity	Budgeted Cost Pool	Activity Cost Driver
Engineering	\$ 125,000	Engineering hours
Setups	300,000	Number of setups
Machine running	1,500,000	Machine-hours
Packing	75,000	Number of packing orders
Total	<u>\$2,000,000</u>	

These are the actual activity units or transactions for each product:

Here are the actual activity units or transactions for both products:

Activity Consumption			
Activity Driver	Deluxe	Regular	Total
Engineering hours	5,000	7,500	12,500
Number of setups	200	100	300
Machine-hours	50,000	100,000	150,000
Number of packing orders	5,000	10,000	15,000





**Traditional Costing Analysis** In the traditional costing approach, the factory overhead (OH) is allocated on the basis of direct labor-hours (DLH) as the cost driver:

**Traditional Costing Analysis** In the traditional costing approach, the factory overhead (OH) is allocated on the basis of direct labor-hours (DLH) as the cost driver:

Total DLH:  $25,000 + 75,000 = 100,000$

Overhead rate per DLH:  $\$2,000,000 / 100,000 = \$20$

OH assigned to deluxe:  $\$20 \times 25,000 = \$500,000$

Deluxe OH cost per unit:  $\$500,000 / 5,000 = \$100$

OH assigned to regular:  $\$20 \times 75,000 = \$1,500,000$

Regular OH cost per unit:  $\$1,500,000 / 15,000 = \$100$

Exhibit 4-5 presents a product profitability analysis under the traditional costing system.

**Activity-Based Costing Analysis** In the activity-based costing approach, the cost driver rate for each activity cost driver—that is, the activity rate—is calculated as follows:

**Calculate the activity rate for each activity cost driver.**

Activity-Based Costing Analysis			
Activity Driver	Cost	Activity Consumption	Activity Rate
Engineering hours	\$ 125,000	12,500	\$ 10
Number of setups	300,000	300	1,000
Machine-hours	1,500,000	150,000	10
Number of packing orders	75,000	15,000	5

$$\$125,000 \div 12,500 = \$10 \text{ per engineering hour}$$

Factory overhead costs are assigned to both products, as shown by these calculations

Deluxe Model				
Activity Driver	Activity Rate	Number of Activities	Total OH	Unit OH
Engineering hours	\$ 10	5,000	\$ 50,000	\$ 10
Number of setups	1,000	200	200,000	40
Machine-hours	10	50,000	500,000	100
Number of packing orders	5	5,000	25,000	5
Production volume = 5,000 units			<u>\$ 775,000</u>	<u>\$ 155</u>

$$\$50,000 \div 5,000 = \$10 \text{ per unit}$$





### Regular Model

Activity Driver	Activity Rate	Number of Activities	Total OH	Unit OH
Engineering hours	\$ 10	7,500	\$ 75,000	\$ 5.00
Number of setups	1,000	100	100,000	6.67
Machine-hours	10	100,000	1,000,000	66.67
Number of packing orders	5	10,000	50,000	3.33
Production volume = 15,000 units			<u>\$1,225,000</u>	<u>\$ 81.67</u>

$$\$75,000 \div 15,000 = \$5.00 \text{ per unit}$$

### EFFECTS OF ABC

An ABC system will apply high amounts of overhead to a product that places high demands on expensive resources. If a product places few demands on expensive resources, the system will assign little of that cost to the product. This will remove much of the cost distortion caused by traditional, volume- based overhead systems.

Exhibit 4-6 presents a product profitability analysis under the activity-based costing system and Exhibit 4-7 compares product costs and profit margins under the two costing systems.

#### Exhibit 4-5 Product Profitability Analysis under the Traditional Costing System

	Deluxe	Regular
Unit selling price	<u>\$400</u>	<u>\$200</u>
Unit product cost		
Direct material and labor	\$200	\$ 80
Factory overhead	<u>100</u>	<u>100</u>
Cost per unit	<u>\$300</u>	<u>\$180</u>
Product margin	<u>\$100</u>	<u>\$ 20</u>

#### Exhibit 4-6 Product Profitability Analysis under the ABC Costing System

	Deluxe		Regular	
Unit selling price		\$400		\$200.00
Unit product cost				
Direct material and labor		\$200		\$80.00
Factory overhead				
Engineering	\$ 10		\$ 5.00	
Setups	40		6.67	
Machine running	100		66.67	
Packing	<u>5</u>	<u>155</u>	<u>3.33</u>	<u>81.67</u>
Cost per unit		<u>355</u>		<u>161.67</u>
Product margin		<u>\$ 45</u>		<u>\$ 38.33</u>



**Exhibit 4-7 Comparison of Alternative Costing Approaches**

	<i>Allocation Method</i>		
	(1) Traditional	(2) ABC	(1) – (2) Difference
<b>Deluxe</b>			
Total overhead	\$ 500,000	\$ 775,000	\$(275,000)
Unit OH cost	100	155	(55)
Unit margin	100	45	55
<b>Regular</b>			
Total overhead	\$1,500,000	\$1,225,000	\$ 275,000
Unit OH cost	100	81.67	18.33
Unit margin	20	38.33	(18.33)

Remember that one major limitation of the traditional costing system is that it generally undercosts complex low-volume products and overcasts high-volume products.

The activity-based costing system presents a more accurate measurement pattern of overhead consumption. The preceding comparison shows that the traditional product costing system can significantly undercost the deluxe printer (a low-volume product) and overcast the regular printer (a high-volume product) compared with the actual overhead consumption. Consequently, traditional product costing can cause distorted inventory measurement, incorrect product-line decisions, unrealistic pricing, ineffective resource allocations, misplaced strategic focus, misidentified critical success factors, and lost competitive advantage.



# LIFE-CYCLE COSTING



### **LIFE-CYCLE COSTING (basis for cost planning and product pricing NOT GAAP)**

A life-cycle approach to budgeting estimates a product's revenues and expenses over its entire sales life cycle beginning with research and development, proceeding through the introduction and growth stages into the maturity stage, and finally into the harvest or decline stage.

Accordingly, life-cycle costing takes a long-term view of the entire cost life cycle, also known as the value chain.

#### Value Chain for a Manufacturer



Upstream costs

Downstream costs

The total costs for a product's life cycle have three phases, thus Costs are determined for all value-chain categories:

1. Upstream (R&D, design),
  - a. Upstream costs: costs that are prior to the manufacturing of the product or sale of the service, such as R&D or design (prototypes, tests, and engineering)
2. Manufacturing,
  - a. Manufacturing costs: costs involved in producing a product or service, such as purchasing and direct and indirect manufacturing costs and
3. Downstream (marketing, distribution, and customer service).
  - a. Downstream costs: costs subsequent to (or coincident with) manufacturing costs, such as marketing, distribution (packaging, shipping and handling, promotions, and advertising), service costs, and warranty costs (defect recalls, returns, and liability).

### **LIFE CYCLE COSTING VS. TRADITIONAL COSTING**

In contrast, traditional approaches focus on cost control (as opposed to cost reduction) during production and treat pre- and postproduction (upstream and downstream) costs as period costs that are largely ignored in determining the profitability of specific products.

- a. Other costs that traditional methods ignore are the after-purchase costs (operating, .support, repair; and disposal) incurred by customers.

### **CMA Sample Q (Whole-life cost equals the Life-cycle cost plus after-purchase costs.)**

Claremont Company has been asked to evaluate the profitability of a product that it manufactured and sold from Year 7 through Year 10. The product had a one-year warranty from date of sale. The following information appears in the financial records.



Research, development, and design cost	Manufacturing and distribution costs	Warranty costs	Warranty cost
Yr 5 & Yr 6	Yr 7 - Yr 10	Yr 7 - Yr 10	Yr 11
\$5,000,000	\$7,000,000	\$200,000	\$100,000

The life-cycle cost for this product is.....

Life-cycle costing takes into account costs incurred at all stages of the value-chain, not just manufacturing. The life-cycle cost for this product is thus \$12,300,000 (\$5,000,000 + \$7,000,000 + \$200,000 + \$100,000).

#### Life-cycle and whole-life cost concepts are associated with target costing and target pricing

A firm may determine that market conditions require that a product sell at a given target price. Hence, a target cost can be determined by subtracting the desired unit profit margin from the target price. The cost reduction objectives of life-cycle and whole-life cost management can therefore be determined using target costing.

#### LIFE-CYCLE COSTING (NOT GAAP)

For financial statement purposes, costs during the upstream phase must be expensed in the period incurred. For management accounting purposes, the costs (such as R&D) that result in marketable products represent a life-cycle investment and must therefore be capitalized.

#### Backflush costing in just-in-time production systems

A just-in-time (JIT) system produces materials just as they are needed for the next step in production. The trigger for manufacturing at a particular work area is the demand from the next station down the line, thus JIT production systems are a "demand-pull" manufacturing system. Customer demand triggers initial production need, working backward all the way to raw material purchases at the beginning of the cycle. JIT also reduces manufacturing lead time by organizing manufacturing into cells that are closely coordinated. HT ensures timely material deliveries and meets customer demands while simultaneously ensuring high-quality products at the lowest possible cost. Therefore, organizations using HT production have very little inventory, making the choice of inventory valuation methods (e.g., FIFO, weighted-average) and inventory costing methods (e.g., absorption costing, variable costing) irrelevant because the costs flow directly to cost of goods sold during an accounting period.

#### Backflush costing Vs. Traditional costing systems (sequential tracking)

Backflush costing. Costing system that omits recording some or all of the journal entries relating to the cycle from purchase of direct material to the sale of finished goods.

Traditional costing systems use sequential tracking, which is any process that records purchases and movements of costs between inventories and accounts in the order in which they occur.



# Process Cost Accounting

## (COST ACCUMULATION SYSTEM)



## Process cost accounting

Process cost accounting is used to assign costs to inventoriable goods or services. It is applicable to **relatively homogeneous products** that are mass produced on a continuous basis (e.g., petroleum products, thread, computer monitors, Oil refining, Textiles, Paints, Flour, Canneries, Rubber, Steel, Food processing).

### Characteristics of Process Costing

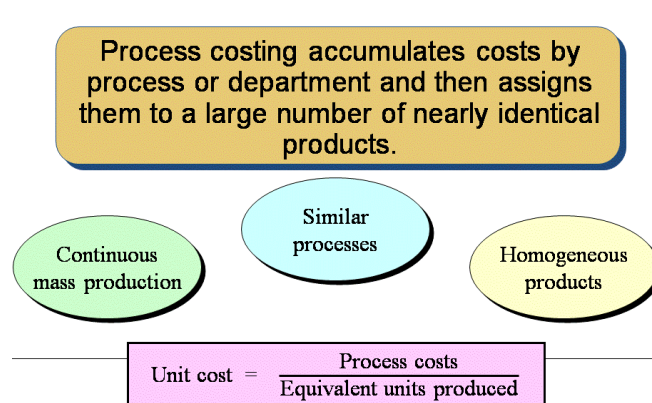
Due to mass production direct labor costs are usually small in comparison to other costing system , thus DL cost combined with Manufacturing overhead to constitutes conversion costs.

### Comparing Job-Order and Process Costing

Where job-order costing uses subsidiary ledgers to keep track of specific jobs, process costing typically has a **work-in-process account for each department** through which the production of output passes.

Process costing is an averaging process that calculates the average cost of all units:

- 1) Costs are accumulated for a cost object that consists of a large number of similar units of goods or services;
- 2) Work-in-process is stated in terms of equivalent units;
- 3) Unit costs are established.



The accumulation of costs under a process costing system is **by department rather than by project**. This reflects the continuous, homogeneous nature of the manufacturing process.

Because manufacturing overhead is assigned to work-in-process as part of conversion costs, there is **rarely an overhead control or overhead applied account** under process costing, and the issue of over- or underapplied overhead does not arise. The exception is when a standard costing system is used. Under standard costing, a predetermined overhead rate (as in job-order costing) is used to assign overhead costs. (See **flow of cost accumulation** in a process costing system in your book).

#### Steps in process costing

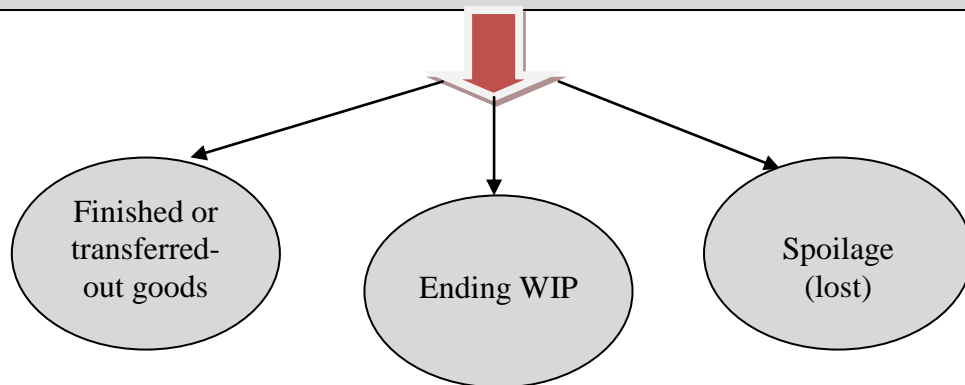
1. Account for all units (physical flow of quantities).
2. Compute the equivalent units of production (EUP).
3. Compute unit cost per EUP.





**Step 1: Account for All Units :** step 1 important to determine any missing information in questions (normally spoilage), same in both FIFO and Weighted average methods, ignores the % percentage of completion for beginning and ending WIP).

Beginning WIP	XX
Started Units this period	XX
	<hr/>
Total Units to Account for	xxxxxx



### Step 2: compute Equivalent Units of Production

Equivalent units are the product of the number of partially completed units and the percentage completion of those units.



We need to calculate equivalent units because a department usually has some partially completed units in its beginning and ending inventory.

- One equivalent unit is the amount of direct materials or conversion costs (direct labor and manufacturing overhead) required to produce one unit of finished goods.
- The objective is to allocate direct materials and conversion costs incurred during the period to finished goods, ending work-in-process (EWIP) and spoilage.
- EUP is separately computed for direct materials and conversion (DL & MOH) costs.



## Equivalent Units – The Basic Idea

Two half completed products are *equivalent to* one completed product.



So, 10,000 units 70% complete are *equivalent to* 7,000 complete units.

Example: For the current period, Jones started 15,000 units and completed 10,000 units, leaving 5,000 units in process 30 percent complete. How many equivalent units of production did Jones have for the period?

- a. 10,000
- b. 11,500
- c. 13,500
- d. 15,000

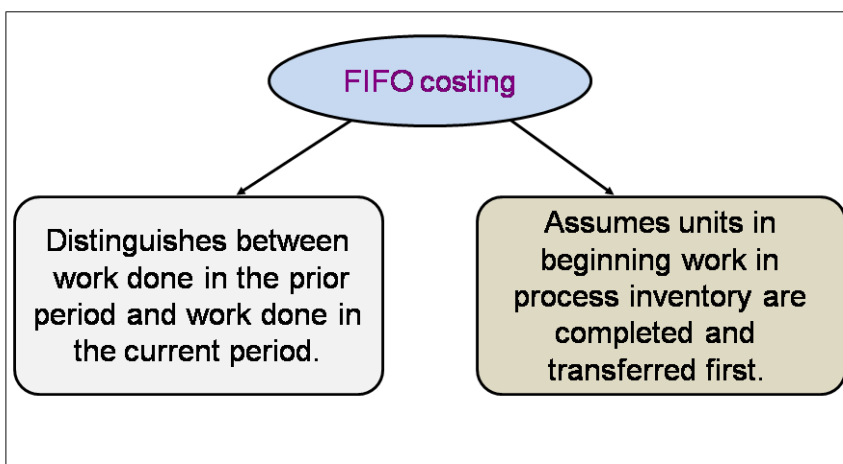
Answer:  $10,000 \text{ units} + (5,000 \text{ units} \times 0.30)$   
 $= 11,500 \text{ equivalent units}$

Two cost-flow assumptions in Process costing: First In First Out (FIFO).Vs. Weighted Average.

### First In First Out (FIFO)

#### Assumptions:

Only costs incurred this period are allocated between finished goods and EWIP. Manufacturing costs in beginning work in process (BWIP) are excluded from the current –period unit cost calculations.



The beginning work in process (BWIP) inventory is to be completed and transferred first.

The ending work-in-process (EWIP) inventory results from goods processed this period.

EUP is separately computed for direct materials and conversion (DL & MOH) costs.



EUP Computation under FIFO (If materials are added as work in process continually):

	<u>Material</u>	<u>Conversion</u>
Total units Completed	XX	XX
- Beginning WIP (regardless of % of completion)	(XX)	(XX)
<hr/>		
Units Started and Completed this Period	XX	XX
+ Amount needed to complete Beginning WIP	XX	XX
+ Amount Completed on Ending WIP	XX	XX
<hr/>		
EUP under FIFO	XX	XX
<hr/>		

If materials are added at the beginning of a process :

Total Units Completed	XX
+ Amount of materials Needed to Complete BWIP	zero
+ Amount of materials Added to Date on EWIP	100%
<hr/>	
EUP for Materials	XXX
<hr/>	

If materials are added at the end of a process

Total Units Completed	XX
+ Amount of materials Needed to Complete BWIP	100%
+ Amount of materials Added to Date on EWIP	zero
<hr/>	
EUP for Materials	XXX
<hr/>	



## EUP : Weighted Average

### ➤ Assumptions

- No differentiation is made between goods started in the preceding and the current periods.
- The beginning WIP inventory costs are merged with the costs of the units started during the period and new average cost is obtained.
- EUP under weighted average differs from EUP under FIFO by the amount of EUP in beginning WIP.
- Total EUP completed from beginning WIP is not deducted in determining current EUP.

EUP under weighted average costing may be computed as follows:

Total Units Completed this period	XX
+ Work to date on Ending WIP	XX
	<hr/>
EUP under weighted average	<u>XXXX</u>

### Comparing Weighted Average to FIFO

- ✓ The difference between weighted average and FIFO is the handling of beginning WIP.
- ✓ If there is no beginning WIP inventory, both assumptions will have the same EUP.

## EUP :Example 1

➤ The following data relate to the activities of department A during the month of January :

assume that all materials are added at the beginning of the process .

	Units
Beginning WIP (66.67% Completed as to Conversion)	1,500
Units started this period	5,000
Units Completed and Transferred to the following process	5,500
EWIP (60% Completed as to conversion)	1,000

### Required

Compute EUP using FIFO and Weighted Average.

## EUP :Example 1 Solution

➤ Accounting for all units (Physical Quantities)

	<u>Units</u>
BWIP	1500
Units Started this period	<u>5000</u>
<b>Total Units to Account for</b>	<b><u>6500</u></b>
Units completed and transferred	5500
EWIP	<u>1000</u>
<b>Total Units to Accounted for</b>	<b><u>6500</u></b>

**EUP : Examples 1 solution (EUP-FIFO)**

	<u>Materials</u>	<u>Conversion</u>
Units Completed and transferred	5500	5500
- Beginning WIP	<u>(1500)</u>	<u>(1500)</u>
<b>Units Started and Completed this period</b>	<b>4000</b>	<b>4000</b>
<b>Amount needed to complete BWIP</b>		
0% materials	zero	
33.33% Conversion (1500 units X 33.33%)		500
<b>Amount to date on Ending WIP</b>		
100% Materials (1000 units x 100%)	1000	
60% Conversion (1000 x 60%)		600
<b>EUP Under FIFO</b>	<b>5000</b>	<b>5100</b>

**EUP :Example 1 solution (EUP-Weighted average )**

	<u>Materials</u>	<u>Conversion</u>
Units Completed and Transferred	5500	5500
Amount to Date on EWIP		
100%materials ( 1000 x 100%)	1000	
60% Conversion ( 1000 x 60%)		600
<b>EUP Under Weighted Average</b>	<b>6500</b>	<b>6100</b>

**EUP : Example 2**

- The same facts as in example 1 except that all materials are added at the end of the process.

## ➤ Required

Compute EUP using FIFO and Weighted average

**EUP :Example solution (EUP-FIFO )**

	<u>Materials</u>	<u>Conversion</u>
Units Completed and transferred	5500	5500
- Beginning WIP	<u>(1500)</u>	<u>(1500)</u>
<b>Units started and Completed this period</b>	<b>4000</b>	<b>4000</b>
<b>Amount needed to Complete</b>		
100% Materials	1500	
33.33% Conversion (1500 x33.33%)		500
<b>Amount to Date on Ending WIP</b>		
0% materials (1000 x 0%)	0	
60% Conversion (1000 x 60%)		600
<b>EUP Under FIFO</b>	<b>5500</b>	<b>5100</b>

**EUP :Example solution (EUP-Weighted average )**

	<u>Materials</u>	<u>Conversion</u>
Units Completed and Transferred	5500	5500
Amount to Date on EWIP		
0% Materials (1000 x 100%)	0	
60%Conversion (1000 x 60%)		600
<b>EUP Under Weighted Average</b>	<b>5500</b>	<b>6100</b>



### Step 3 : Compute Unit Cost

#### ➤ Unit Cost Under FIFO

<u>Current Manufacturing Cost</u>					
EUP (FIFO)					
Manufacturing Cost	Current MC	÷	EUP (FIFO)	=	Unit Cost
DM	\$xx	÷	xx	=	\$xx
Conversion (DL&MOH)	\$xx	÷	xx	=	xx
Total Unit Cost –FIFO					\$XXX

#### ➤ Unit cost under Weighted Average (WA)

<u>Cost of BWIP + Current manufacturing Cost</u>					
EUP (WA)					
Manufacturing Cost	BWIP Cost + Current MC	÷	EUP (WA)	=	Unit Cost
DM	\$xx + \$xx	÷	xx	=	\$xx
Conversion (DL&MOH)	\$xx + \$xx	÷	xx	=	xx
Total Unit Cost –Weighted Average					\$XXX

### Accounting for spoilage

Southwood Industries uses a process costing system and inspects its goods at the end of manufacturing. The inspection as of June 30 revealed the following information for the month of June.

Good units completed	16,000
Normal spoilage (units)	300
Abnormal spoilage (units)	100

Unit costs were: materials, \$3.50; and conversion costs, \$6.00.

What is the number of units that Southwood would transfer to its finished goods inventory and the related cost of these units are?

Step 1: calculating the total cost of the completed units = 16,000 X (\$3.5+\$6) = **\$ 152,000**

Step 2: adding only the cost of normal spoilage as it represents the additional product cost for the completed units totaled 16,000 {Cost of Normal spoilage = 300 X (\$3.5+\$6) = **\$2,850**}

Thus, for sure the number of units that Southwood would transfer to its finished goods inventory should be based on the 16,000 “Good units completed” but with total cost = **\$ 152,000 + \$2,850= \$154,850**



## Operation costing

Many companies have costing systems that are neither pure job costing nor pure process costing but have elements of both. so it use a hybrid system called Operation costing, in a hybrid system direct materials costs are charged to specific products (as in job-order systems) but conversion costs are accumulated and a unit conversion cost for each operation is derived (as in process costing).

Example : Fashion Inc. manufactures women's dresses using cotton and polyester. Since the same style dresses are made out of both fabrics, Fashions uses operation costing.

During June, 1,000 cotton dresses were completely produced.

Also during June, 1,500 polyester dresses were started by adding all materials at the beginning of the process. Of these 1,500 dresses, 700 were completely finished and the remainder were 25 percent complete by the end of the month. There was no work-in-process inventory at the beginning of June.

Costs incurred during June were as follows.

Cotton	\$10,000
Polyester	22,500
Conversion costs	13,300

The cost per unit to manufacture one polyester dress during June was

	<b>M</b>	<b>C</b>	
	\$22,500	\$13,300.0	
<b>units</b>	1500	1900	
<b>per unit</b>	<b>\$15</b>	<b>\$7</b>	<b>\$22</b>



## STUDY UNIT SIX COST ALLOCATION TECHNIQUES

### Introduction

Cost allocation, which is a problem in nearly every organization and nearly every facet of accounting, provides information needed for both strategic and operating decisions.

There is rarely one "best" way to allocate costs. Cost allocation requires judgment, and reasonable people may differ in their judgments. Job costing and ABC in units 4 examined topics related largely to the allocation of indirect costs to individual products. As we saw then, finding answers to cost-allocation questions is often difficult. The answers are seldom clearly right or wrong.

### Cost allocation issues

- Macro issues: allocating costs to divisions, plants, and customers.
- Micro issues: allocating support costs to operating departments and allocating common costs to various cost objects.

The question now why do managers allocate indirect costs to these cost objects? Now we will illustrate four purposes of cost allocation then introducing four criteria used to guide cost allocation decisions.

### Four purposes of cost allocation

1. To provide information for **economic decisions**
2. To **motivate** managers and employees
3. To **justify** costs or compute reimbursement
4. To measure income and assets for reporting to **external parties**

### Different costs are appropriate for different purposes

(allocate or not according to management decision purpose)

Consider costs of a product in terms of the business functions in the value chain (research and development, marketing, distribution, and customer service costs).

For some decision related to the **economic-decision purpose**

- (for example, long-run product pricing), the costs in all six functions should be included.

For the **motivation purpose**, costs from more than one business function are often included to emphasize to managers how costs in different functions are related to each other.

- For example, product designers in some Japanese companies incorporate costs of other functions in the value chain - such as production, distribution, and customer service into their product-cost estimates. The aim is to focus attention on how different product design options affect total costs.

For the **cost-reimbursement purpose**, the particular contract will often stipulate whether all six of the business functions or only a subset of them are to be reimbursed.

- For instance, cost-reimbursement rules for U.S. government contracts explicitly exclude marketing costs.



For the **purpose of income and asset measurement** for reporting to external parties, inventoriable costs under GAAP include only manufacturing costs (and product design costs in some cases). In the United States, R&D costs in most industries are a period cost when they are incurred, as are marketing, distribution, and customer-service costs

**Cost allocations can be used to motivate managers to consume less or more of the company's resources**

- To *discourage* use, the cost of a department's services could be allocated according to the amount of services used.
- To *encourage* use of a department's services (for example, internal audit). Top management might
  - not allocate any of the cost of that department's services or
  - allocate a fixed amount of the cost of that department to other departments regardless of how much of those services are used by those other departments (the other departments may feel obligated to use the services to get their "money's worth")

## CRITERIA TO GUIDE COST-ALLOCATION DECISIONS

These decisions affect both the number of indirect-cost pools and the cost-allocation base for each indirect-cost pool. Managers must first identify the purpose for a particular cost allocation and then select the criteria, to allocate costs.

**1. Cause and Effect** (most preferred). It identifies variables that cause cost objects to incur costs.

Using this criterion, managers identify the variables that **cause** resources to be consumed. For example, managers may use hours of testing as the variable when allocating the costs of a quality-testing area to products. Cost allocations based on the cause-and-effect criterion are likely to be the most credible to operating personnel.

The cause-and-effect criterion is the primary one used in activity-based costing (ABC) applications. ABC systems use the concept of a cost hierarchy to identify the cost drivers that best demonstrate the cause-and-effect relationship between each activity and the costs in the related cost pool. The cost drivers are then chosen as cost allocation bases.

**2. Benefits Received.** (most frequently used alternative when a cause-and-effect relationship cannot be determined.)

Using this criterion, managers identify the beneficiaries of the outputs of the cost object. The costs of the cost object are allocated among the beneficiaries in proportion to the benefits each receives. Consider a corporate wide advertising program that promotes the general image of the corporation rather than any individual product. The costs of this program may be allocated on the basis of division revenues; the higher the revenues, the higher the division's allocated cost of the advertising program. The rationale behind this allocation is that divisions with higher revenues apparently benefited from the advertising more than divisions with lower revenues and, therefore, ought to be allocated more of the advertising costs.

We emphasize the superiority of the cause and-effect and the benefits-received criteria, especially when the purpose of cost allocation is economic decisions or motivation.

**3. Fairness or Equity.** (Least preferred) This criterion is often cited in government contracts when cost allocations are the basis for establishing a price satisfactory to the government and its suppliers. Cost allocation here is viewed as a "reasonable" or "fair" means of establishing a selling price in the minds of the contracting





parties. For most allocation decisions, fairness is a difficult-to-achieve objective rather than an operational criterion.

**4. Ability to Bear.** (least preferred) ) This criterion advocates allocating costs in proportion to the cost object's ability to bear costs allocated to it. An example is the allocation of corporate executive salaries on the basis of division operating income. The presumption is that the more-profitable divisions have a greater ability to absorb corporate headquarters' costs.

the more profitable divisions have a greater ability to bear costs. It subsidizes poor performers at the expense of the best performers. It is usually unacceptable because of its negative effect on managerial motivation

Fairness and ability to bear are less frequently used criteria than cause and effect or benefits received. Fairness is a difficult criterion on which to obtain agreement. What one party views as fair, another party may view as unfair.

The following sequential outline gives the "big picture" of cost allocation:

1. Determine the purpose of the allocation, because the purpose defines *what costs* will be allocated.
2. Decide *how* to allocate the costs from step 1. To do so,
  - a. Decide *how many indirect- cost pools* to form, and then
  - b. Identify an *allocation base* (preferably a cost driver) *for each cost pool*



# Inventory-costing choices: Absorption (Full) vs. Variable\* (Direct\*\*)

\* *variable costing* is a less than perfect term to describe this inventory-costing method because not all variable costs are inventoriable costs. Only variable manufacturing costs are inventoriable.

\*\* direct costing is not an accurate description for two reasons: (1) Variable costing does not include all direct costs as inventoriable costs. Only direct variable manufacturing costs are included. Any direct fixed manufacturing costs and any direct nonmanufacturing costs are excluded from inventoriable costs.

(2) Variable costing includes as inventoriable costs not only direct manufacturing costs but also some indirect costs (indirect variable manufacturing costs).



## Inventory-costing choices: Absorption (Full) vs. Variable (Direct)

After the cost accumulation method and the cost measurement method have been chosen, the firm must decide how it is going to account for allocating overhead (fixed and variable) to the products. There are two different approaches that can be used to determine which manufacturing costs are to be included in the cost of the product:

- I. Absorption (or full) costing and
- II. Variable (direct) costing.

### A. ABSORPTION (GAAP COSTING)

Absorption costing capitalizes fixed factory overhead expenses as part of the cost of inventory (goods manufactured and not yet sold) in accordance with generally accepted accounting principles (GAAP). Therefore, absorption costing includes direct material, direct labor, and all overhead (variable and fixed) as inventoriable costs. Absorption costing is also referred to as "conventional," "absorption," "full" or "full absorption" costing.

#### 1. Benefits of Absorption Costing

- a. Absorption costing is GAAP.
  - b. The Internal Revenue Service requires the use of the absorption method for financial reporting.
- Accountants who support absorption costing maintain that inventories should carry a fixed manufacturing cost component. Why? Because both variable manufacturing costs and fixed manufacturing costs are necessary to produce goods. Therefore, both types of costs should be inventoriable, regardless of their different behavior patterns.

#### 2. Limitations of Absorption Costing

- a. The level of inventory affects net income because fixed costs are a component of product cost.
- b. The net income reported under the absorption method is less reliable (especially for use in performance evaluations) than under the variable method because the cost of the product includes fixed costs and, therefore, the level of inventory affects net income.

Note that; under the absorption method, management was able to show higher income by overproducing. If the manager was being given a bonus for a higher level of income, (s)he could obtain the bonus by producing more units than could be sold. As a result, some fixed costs would be added to the balance sheet as inventories. Thus, the income statement and balance sheet both look good, despite the fact that the production manager has done a bad thing: (S)he has produced excessive inventories, which require the company to incur storage and financing costs. Spoilage may also be a result.

### B. VARIABLE (Direct) COSTING

Under **variable costing**, only those manufacturing costs that vary with output (Variable manufacturing costs) are treated as product costs (inventory cost). This includes direct materials, variable overhead and ordinarily direct labor. Fixed manufacturing overhead is treated as a period cost and it is expensed on the income statement as incurred.

#### 1. Management Tool

Variable costing is used as a management tool to identify contribution margin, calculate breakeven and expedite profit planning (cost volume profit analysis CVP analysis).



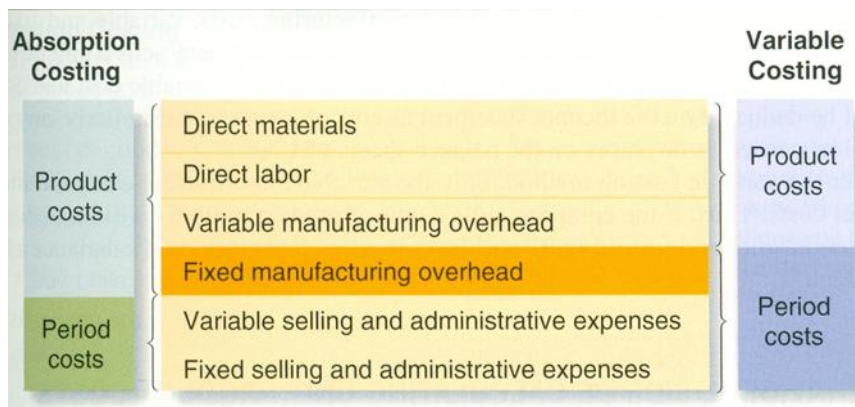
## 2. Benefits of Variable Costing

- Variable costing attains the objectives of management control systems as the costs are listed separately so that they may be easily traced to and controlled by management.
- The net income reported under the contribution income statement is more reliable (especially for use in performance evaluations) than under the absorption method because the cost of the product does not include fixed costs and therefore the level of inventory does not affect net income. Under the variable costing method, a production manager cannot manipulate income levels by overproducing. Given the same cost structure every year, the income levels will be based on sales, not the level of production.
- Variable costing isolates the contribution margins in financial statements to aid in decision-making (the contribution margin is defined as sales price less all variable costs including variable sales and administrative costs and breakeven analysis is often based on contribution margins).

Accountants who favor variable costing for external reporting maintain that the fixed portion of manufacturing costs is more closely related to the capacity to produce than to the actual production of specific units. Hence, fixed costs should be expensed, not inventoried.

## 4. Limitations of Variable Costing

- Variable costing is not GAAP.
- The Internal Revenue Service does not allow the use of the variable cost method for financial reporting. If a company uses VC, it must be in addition to AC.







**Absorption costing (or full costing) is an inventory costing system that includes both variable and fixed manufacturing costs. Inventory absorbs all costs of manufacturing.**

**Variable costing (or direct costing) is an inventory costing method that includes all variable manufacturing costs as inventoriable costs but excludes fixed manufacturing costs. Variable costing expenses fixed manufacturing costs in the period in which the costs are incurred.**

**Each method expenses all nonmanufacturing costs (both fixed and variable) in the period in which they occur. Therefore, these two methods differ only in how they account for fixed manufacturing costs.**



Relation between Production and Sales for the Period	Effect on Inventories 	Relation between Absorption and Variable Costing Net Operating Incomes
Units produced = Units sold	No change in inventories 	Absorption costing net operating income = Variable costing net operating income
Units produced > Units sold	Inventories increase 	Absorption costing net operating income > Variable costing net operating income*
Units produced < Units sold	Inventories decrease 	Absorption costing net operating income < Variable costing net operating income <sup>†</sup>
<p>*Net operating income is higher under absorption costing because fixed manufacturing overhead cost is <i>deferred</i> in inventory under absorption costing as inventories increase.</p> <p><sup>†</sup>Net operating income is lower under absorption costing because fixed manufacturing overhead cost is <i>released</i> from inventory under absorption costing as inventories decrease.</p>		

Under variable costing, operating profit is a function of sales. Under absorption costing, it is a function of sales and production.

#### D. GROSS MARGIN (ABSORPTION COSTING: external reporting) VS. CONTRIBUTION MARGIN (VARIABLE COSTING: internal reporting) INCOME STATEMENTS

The VC income statement uses the contribution-margin format that distinguishes variable costs from fixed costs (based on cost behavior). This format highlights the lump-sum fixed manufacturing overhead (FMOH) costs that are expensed in the period incurred. The AC income statement uses the gross-margin format that distinguishes manufacturing costs from nonmanufacturing costs (functionally based income statement).

Two items distinguish gross margin (GM) from contribution (CM): (1) FMOH costs and (2) variable nonmanufacturing (VNM) costs. AC expenses FMOH costs related to units sold (as part of cost of goods sold) in calculating GM. In contrast, VC expenses total FMOH costs after calculating CM. Also, in AC all nonmanufacturing costs are subtracted from GM; but in VC, VNM costs are subtracted in calculating CM.



### ABSORPTION COSTING

Sales Revenues	\$XX
Less: Cost of goods sold	(x)
*Gross margin	XX
Less: Variable selling and administrative expenses	(x)
Fixed selling and administrative expenses	(x)
Operating income	<u>\$XX</u>

\*Gross profit margin may also be stated as a percentage, which is calculated as gross margin (or profit) divided by sales

### VARIABLE COSTING

Sales Revenues	\$XX
Less: Variable cost of goods sold (excludes fixed overhead)	(x)
Contribution margin from manufacturing	<u>\$XX</u>
Less: variable selling and administrative expenses	(x)
Contribution margin	\$XX
Less: Fixed expenses:	
Fixed manufacturing overhead	\$xx
Fixed selling and administrative expenses	x
Total fixed expenses	(XX)
Operating income	<u>\$XX</u>

Example:

Units made:	700
Units sold:	500
Variable manufacturing costs per unit:	\$30
Variable selling (marketing) costs per unit:	\$20
Fixed manufacturing costs per unit:	\$25
Fixed selling (marketing) costs:	\$14,000

Figure 2-28: Variable Costing vs. Absorption Costing

Variable Costing		Absorption Costing	
Revenues: $200 \times 500$ units	\$100,000	Revenues: $200 \times 500$ units	\$100,000
Variable costs		Costs of goods sold	
Beginning inventory	\$0	Beginning inventory	\$0
+ Variable manufacturing costs: $\$30 \times 700$	+21,000	+ Variable manufacturing costs: $\$30 \times 700$	+21,000
= Cost of goods available for sale	21,000	+ Fixed manufacturing costs: $\$25 \times 700$	+17,500
- Ending inventory: $\$30 \times 200$	-6,000	= Cost of goods available for sale	38,500
= Variable cost of goods sold	15,000	- Ending inventory: $(\$30 \text{ variable} + \$25 \text{ fixed}) \times 200$	-11,000
+ Variable marketing costs: $\$20 \times 500$	+10,000		-27,500
= Total variable costs	-25,000	= Cost of goods sold	
= Contribution margin	75,000	= Gross margin	72,500
Fixed costs		Operating costs	
Fixed manufacturing costs: $\$25 \times 700$	17,500	Variable marketing costs: $\$20 \times 500$	10,000
+ Fixed marketing costs	+14,000	+ Fixed marketing costs	+14,000
+/- Adjustment for fixed cost variances	0	+/- Adjustment for operating cost variances	0
= Total fixed costs	-31,500	= Total operating costs	-24,000
= Operating income	<u>\$43,500</u>	= Operating income	<u>\$48,500</u>



In summary, when inventory increases, net income under absorption costing will be greater than under variable costing by the amount of the fixed cost of the change in inventory (200 units x \$25 = \$5,000 in Figure 2-28). When inventory decreases, net income under absorption costing will be less than under variable costing by the amount of the change in inventory fixed cost.

The difference in reported operating income can be calculated :

$$\begin{array}{ccccccc} \text{Absorption-costing} & & \text{Variable-costing} & & \text{Fixed manufacturing} & & \text{Fixed manufacturing} \\ \text{operating} & \bigcirc & \text{operating} & \bigcirc & \text{cost in ending inventory} & \bigcirc & \text{cost in beginning inventory} \\ \text{income} & - & \text{income} & = & \text{under Absorption-costing} & - & \text{under Absorption-costing} \end{array}$$

The difference between VC and AC operating incomes is *a matter of timing*. Under VC, FMOH costs are expensed in the period incurred. Under AC, FMOH costs are allocated to output produced and are not expensed until those units are sold. In fact, if a company has zero inventory at the beginning and end of each accounting period, there is no difference between these two methods of costing.

However as methods such as just-in-time production and other inventory reduction methods increase in importance, the differences between variable and absorption costing will grow less material.

### ABSORPTION (GAAP COSTING) with standard costing (MEASUREMENT SYSTEM) CMA EXAMPLE (TO BE STUDIED AFTER U.7)

Dremmon Corporation uses a standard cost accounting system. Data for the last fiscal year are as follows.

	Units	
Beginning inventory of finished goods	100	
Production during the year	700	
Sales	750	
Ending inventory of finished goods	50	
<u>Per Unit</u>		
Product selling price	\$200	
Standard variable manufacturing cost	90	
Standard fixed manufacturing cost	20*	
Budgeted selling and administrative costs (all fixed)		\$45,000

**\*Denominator level of activity is 750 units for the year.**

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories. Assuming that Dremmon used absorption costing, the amount of operating income earned in the last fiscal year was





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sales rev	150,000
Cost of Goods Sold	
Beginning inventory	11,000
Variable manufacturing costs	63,000
Fixed manufacturing costs	14,000
<b>Cost for goods available for sale</b>	<b>88,000</b>
deduct ending inventory	5,500
Total COGS(at standard costs)	82,500
<u>Adjustment for manufacturing variances</u>	<u>1,000</u>
<b>Total COGS</b>	<b>83,500</b>
Gross Margin	66,500
Operating cost	45,000
Operating income	21,500

Dremmon has a production-volume variance because production (700 units) differs from the budgeted level of production of 750 units per year used to calculate the budgeted fixed manufacturing cost per unit.

The \$20 fixed manufacturing cost rate is based on a budgeted denominator level of 750 units produced per year ( $\$15,000 \div 750 \text{ units} = \$20 \text{ per unit}$ ). Whenever production - that's the quantity produced not the quantity sold - deviates from the denominator level, there will be a production-volume variance. The amount of the variance here is \$20 per unit multiplied by the difference between the actual level of production and the denominator level.

Production was 700 units, 50 lower than the denominator level of 750 units. The result is an unfavorable production-volume variance of \$1,000 ( $\$20 \text{ per unit} \times 50 \text{ units}$ ).

Recall how standard costing works. Each time a unit is manufactured, \$20 of fixed manufacturing costs is included in the cost of goods manufactured and available for sale.

When 700 units are manufactured, \$14,000 ( $\$20 \text{ per unit} \times 700 \text{ units}$ ) of fixed costs are included in the cost of goods available for sale. Total fixed manufacturing costs for are \$15,000. The production-volume variance of \$1,000 U equals the difference between \$15,000 and \$14,000. Note how, the fixed manufacturing costs included in the cost of goods available for sale plus the production-volume variance always equals \$15,000. The production-volume variance, which relates to fixed manufacturing overhead, exists under absorption costing but not under variable costing. Why? Because under variable costing, fixed manufacturing costs of \$15,000 are always treated as an expense of the period, regardless of the level of production (and sales).

The PVV is the difference between the lump-sum budgeted FMOH and FMOH allocated to output produced. Because FMOH costs aren't allocated to output produced under VC (FMOH costs are expensed as incurred), there is no PVV under VC.





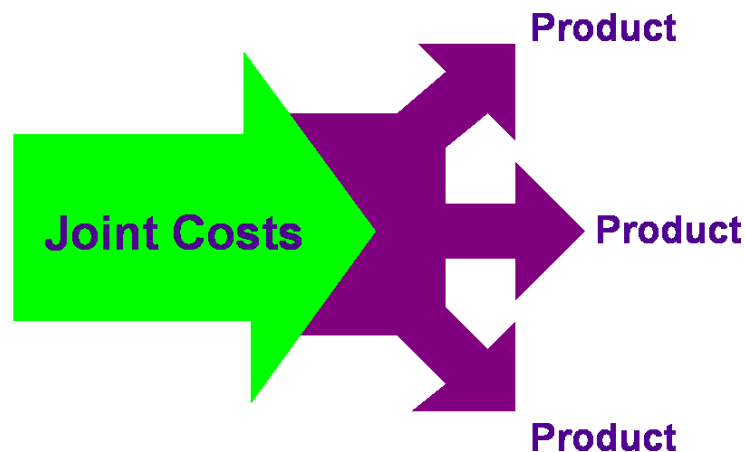
# Allocating Joint Costs



## Allocating Joint Costs

### Identify the methods used for allocating Joint Costs

In a joint-production process, the juncture where one or more products become separately identifiable is called the splitoff point. Separable costs are all of the costs incurred beyond the splitoff point that are assignable to one or more individual products. For example, the joint-production process of milling timber (logs) yields various grades of lumber as well as sawdust and wood chips. The splitoff point is where individual boards are cut from the timber. The costs of planing these boards into finished lumber are separable costs of the finished lumber. This topic examines methods for allocating costs to joint products. We also examine how cost numbers appropriate for one purpose, such as external reporting, may not be appropriate for other purposes, such as decisions about the further processing of joint products.



## Joint Products and Byproducts

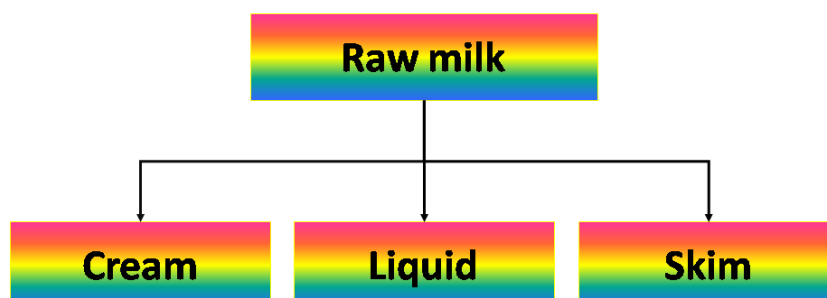
Main Products  
Joint Products

Byproducts

High

Low

Sales Value





## Definitions

**Joint products** are two or more separate products produced by a common manufacturing process from a common input.

**Joint product costs** are incurred in the production of two or more products simultaneously from processing the same raw material by a single process. They are incurred prior to the split-off point and are not separately identifiable. They may be allocated to the joint products based upon their sales value, net realizable value, or physical measure at the point they become separate.

**Split-off point** represents the stage of production at which joint products become identifiable as separate products. These products can be further processed or sold at the split-off point.

**Separable costs** are additional costs incurred for a specific product after the split-off point.

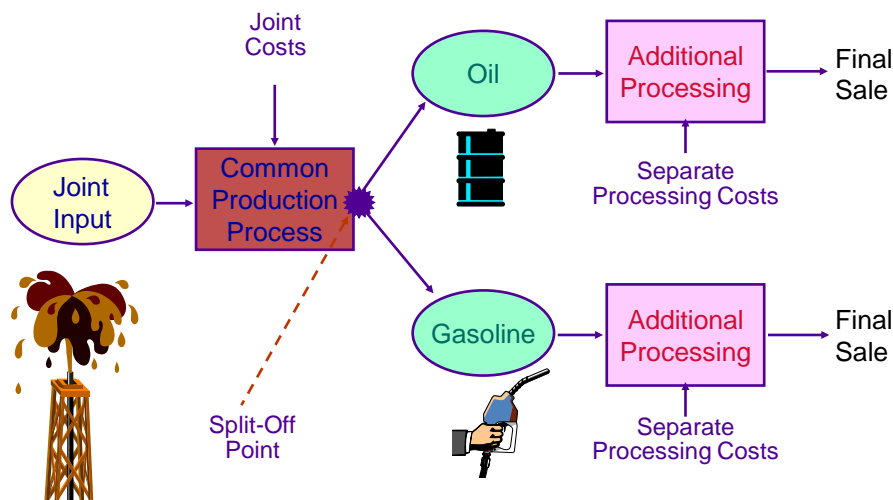
**Net Realizable Value (NRV)** equals sales value less estimated cost to complete and sell.

## Allocation of Joint Costs

- a. Allocation of joint costs IS essential for valuing inventory and determining cost of goods sold.
- b. Joint product cost allocation should not be used in deciding whether to further process or sell the products at the split-off point, i.e., joint costs are irrelevant for that decision.

A joint-production process can yield joint products (or a main product) and byproducts. A joint product has relatively high sales value (revenue) compared to the other products yielded by the joint-production process. If a joint-production process yields only one product with a relatively high sales value, that product is called a main product. A byproduct has a relatively low sales value compared with the sales value of a joint or main product. A joint product can become a byproduct (or vice versa) if its market price moves sizably in one direction.

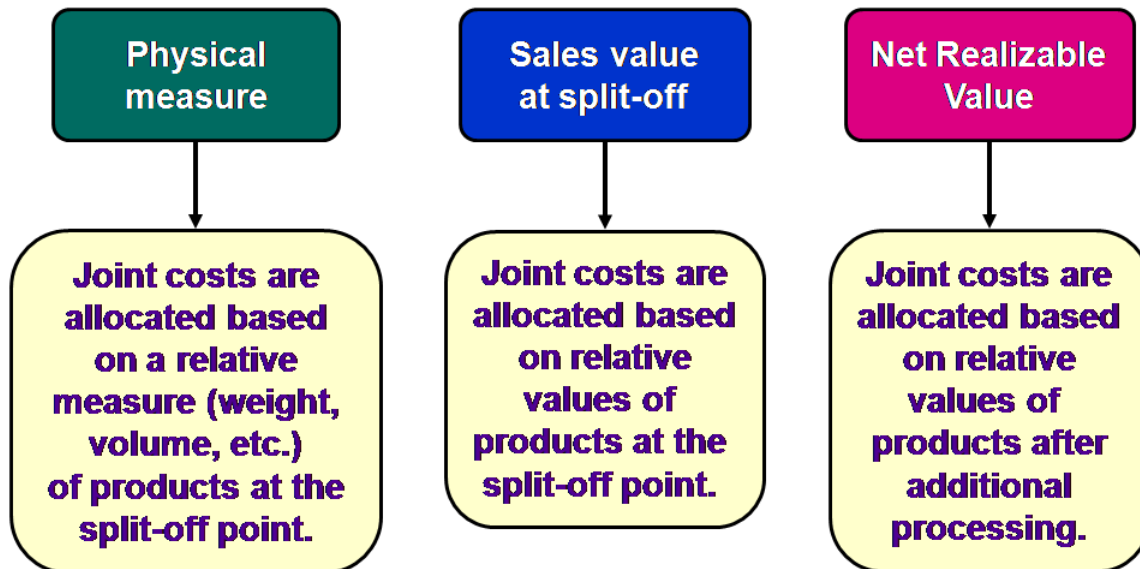
## Joint Product Costing



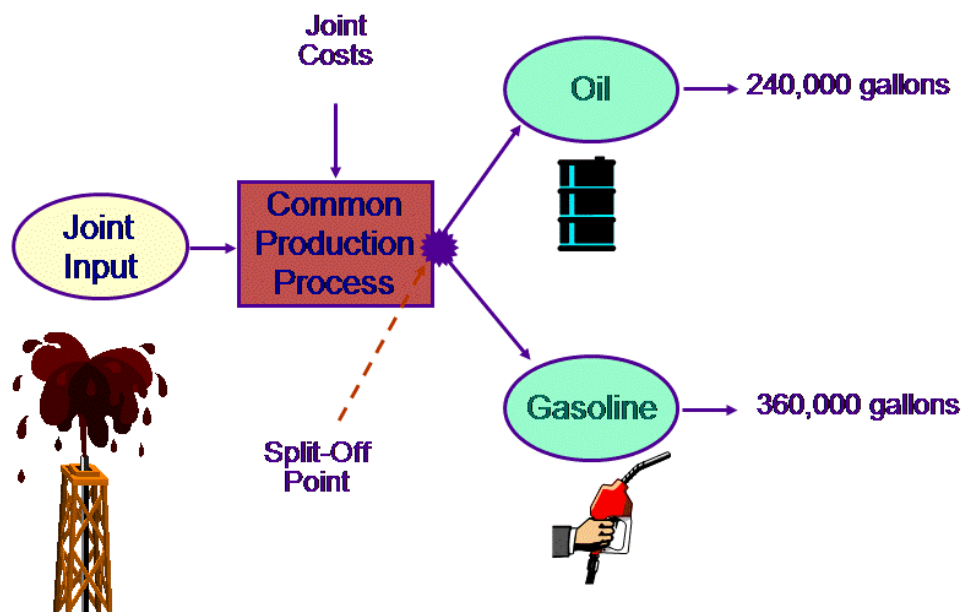


## Methods of allocating joint costs

### Joint Cost Allocation Methods

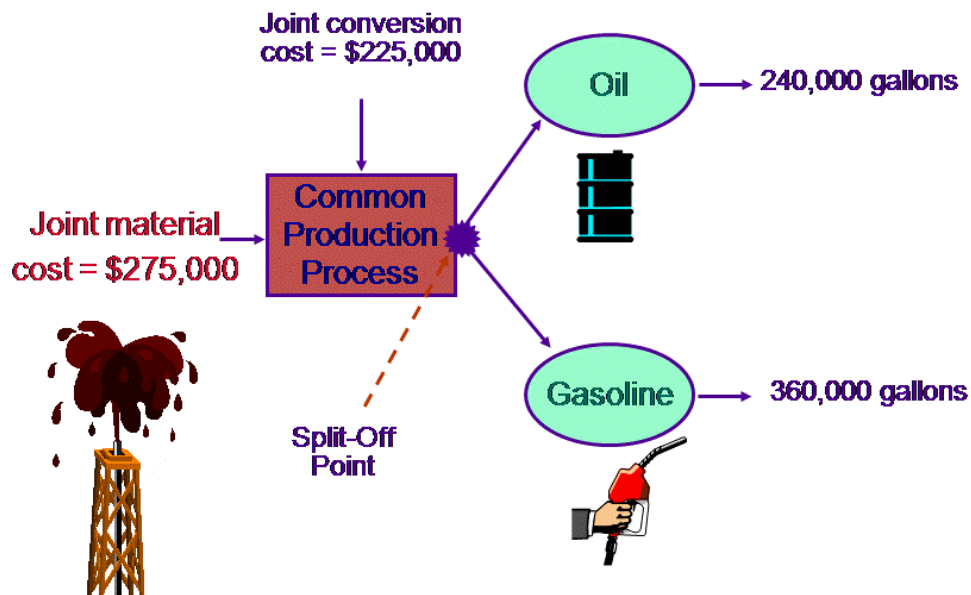


### Physical Measure Method





## Physical Measure Method



## Physical Measure Method

	Product		Total
	Oil	Gasoline	
Output quantities in gallons	240,000	360,000	600,000
Proportionate share:	?	?	
Allocated joint costs:	?	?	

	Product		Total
	Oil	Gasoline	
Output quantities in gallons	240,000	360,000	600,000
Proportionate share:			
$240,000 \div 600,000$	40%		
$360,000 \div 600,000$		60%	
Allocated joint costs:	?	?	

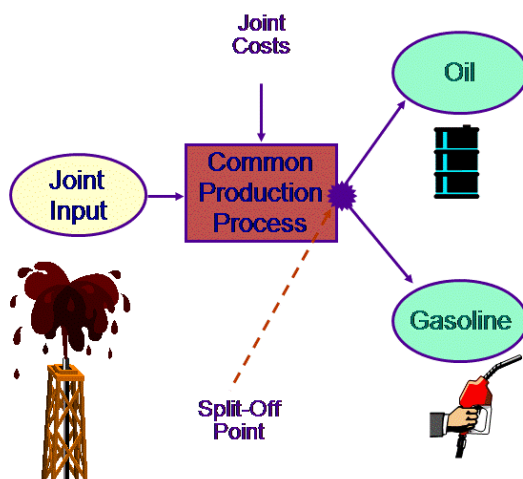


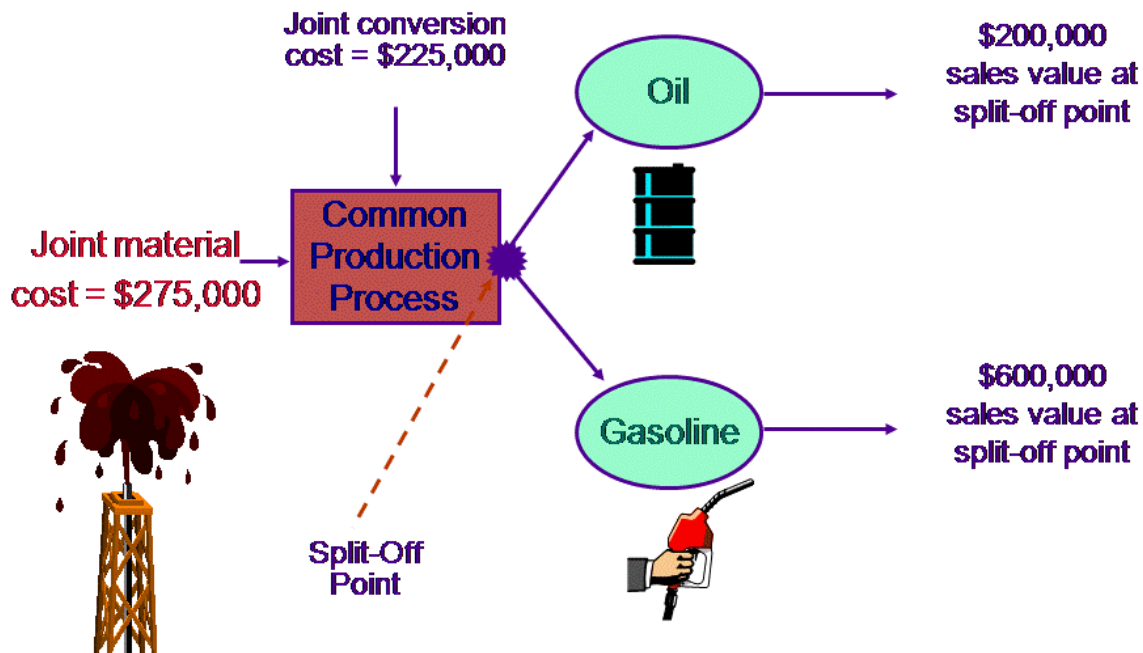
	Product		Total
	Oil	Gasoline	
Output quantities in gallons	240,000	360,000	600,000
Proportionate share: $240,000 \div 600,000$ $360,000 \div 600,000$	40%	60%	
Allocated joint costs: $\$500,000 \times 40\%$ $\$500,000 \times 60\%$	\$ 200,000	\$ 300,000	

## The Physical Units Method: Summary

Advantages	Disadvantages
❶ Easy to use	❶ Ignores the revenue-producing capability of individual products
❷ The criterion for the allocation of the joint costs is objective	❷ Each product can have its own unique physical measure

## Sales Value at Split-Off Method





## Sales Value at Split-Off Method

	Product		Total
	Oil	Gasoline	
Sales value at split-off point	\$ 200,000	\$ 600,000	\$ 800,000
Proportionate share:	?	?	
Allocated joint costs:	?	?	

	Product		Total
	Oil	Gasoline	
Sales value at split-off point	\$ 200,000	\$ 600,000	\$ 800,000
Proportionate share:			
$\$200,000 \div \$800,000$	25%		
$\$600,000 \div \$800,000$		75%	
Allocated joint costs:	?	?	



	Product		Total
	Oil	Gasoline	
<b>Sales value at split-off point</b>	\$ 200,000	\$ 600,000	\$ 800,000
<b>Proportionate share:</b> \$200,000 ÷ \$800,000 \$600,000 ÷ \$800,000	25%	75%	
<b>Allocated joint costs:</b> \$500,000 × 25% \$500,000 × 75%	\$ 125,000	\$ 375,000	

\$275,000 joint conversion cost plus  
\$225,000 joint material cost

## Sales Values at Split-off Point Method: Summary

Advantages	Disadvantages
❶ Easy to calculate	❶ Market prices for some industries change constantly
❷ Costs are allocated according to the individual product's revenue	❷ Sales price at split-off might not be available because additional processing is necessary for sale

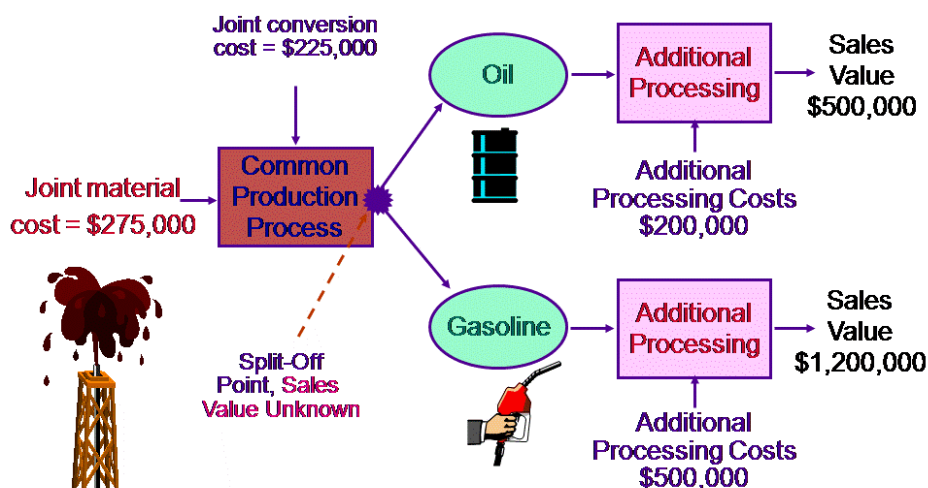




## Net Realizable Value Method

If products require further processing beyond the split-off point before they are marketable, it may be necessary to **estimate** the net realizable value at the split-off point.

$$\text{Estimated NRV} = \text{Final Sales Value} - \text{Added Processing Costs}$$



## Net Realizable Value Method

	Product		Total
	Oil	Gasoline	
Sales value	\$ 500,000	\$ 1,200,000	\$ 1,700,000
Less additional processing costs	?	?	?
Estimated NRV at split-off point	?	?	?
Proportionate share:	?	?	
Allocated joint costs:	?	?	



	Product		Total
	Oil	Gasoline	
Sales value	\$ 500,000	\$ 1,200,000	\$ 1,700,000
Less additional processing costs	200,000	500,000	700,000
Estimated NRV at split-off point	\$ 300,000	\$ 700,000	\$ 1,000,000
Proportionate share:	?	?	
Allocated joint costs:	?	?	

	Product		Total
	Oil	Gasoline	
Sales value	\$ 500,000	\$ 1,200,000	\$ 1,700,000
Less additional processing costs	200,000	500,000	700,000
Estimated NRV at split-off point	\$ 300,000	\$ 700,000	\$ 1,000,000
Proportionate share:			
$\$300,000 \div \$1,000,000$	30%		
$\$700,000 \div \$1,000,000$		70%	
Allocated joint costs:			
$\$500,000 \times 30\%$	\$ 150,000		
$\$500,000 \times 70\%$		\$ 350,000	

### The NRV Method: Summary

Advantages	Disadvantages
① It produces an allocation that yields a predictable, comparable level of profitability among products	① More difficult to calculate than the other two methods
② Selling price at split-off does not have to be available	② Based on an estimated value



# Service Cost Allocation

## Service Cost Allocation

### *Operating departments vs. service departments*

#### **Operating departments**

The central purposes of the organization are carried out in the operating departments (ex.: machining and assembly departments.)

#### **Service departments**

Do not directly engage in operating activities. Instead, they provide services or assistance to the operating departments. (ex.: Cafeteria, Internal Auditing, Human Resources, Cost Accounting, and Purchasing.)

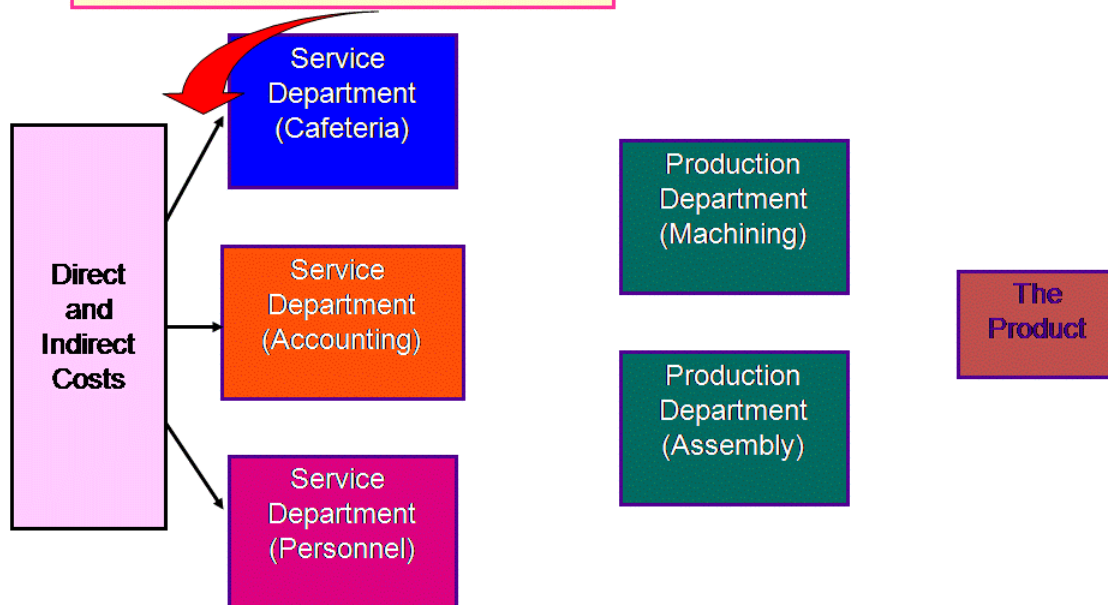
#### **Service Department Costs**

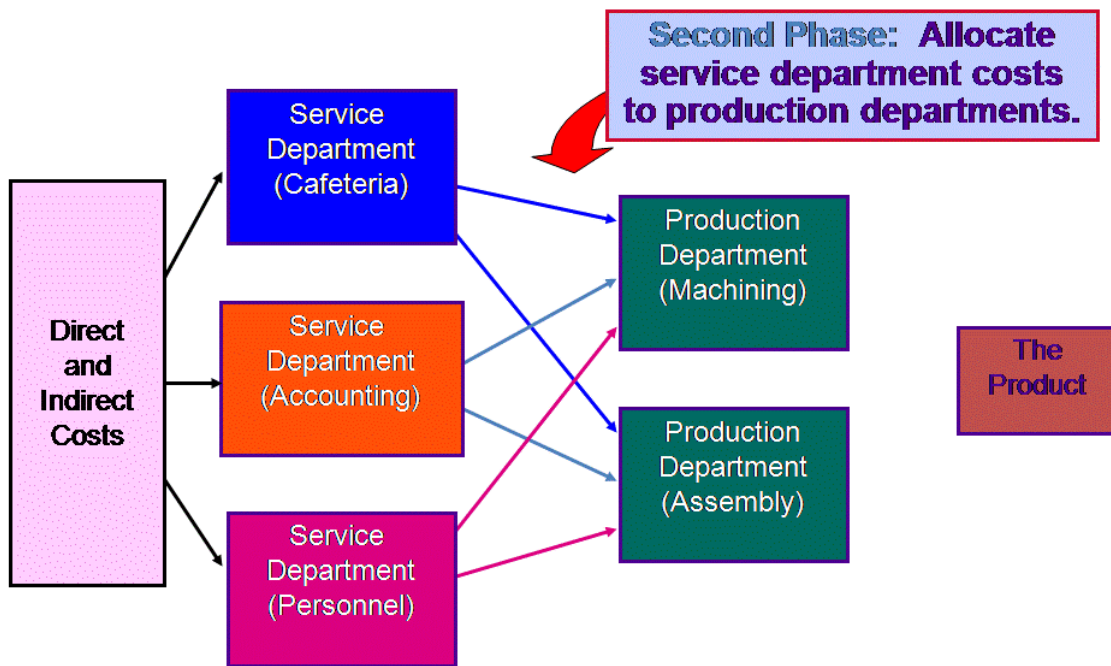
The overhead costs of operating departments commonly include allocations of costs from the service departments. For GAAP purposes to the extent that service department costs are classified as production costs, they should be included in unit product costs and thus must be allocated to operating departments in a process costing system.

This is necessary for product costing and financial reporting: all manufacturing costs, whether originating in production departments or in service departments, must be assigned to the goods produced for proper inventory valuation and cost of goods sold determination. When service departments also render services to each other, their costs may be allocated to each other before allocation to operating departments.

### **Service and Production Department Cost Allocation**

#### **First Phase: Trace direct costs and allocate indirect costs**





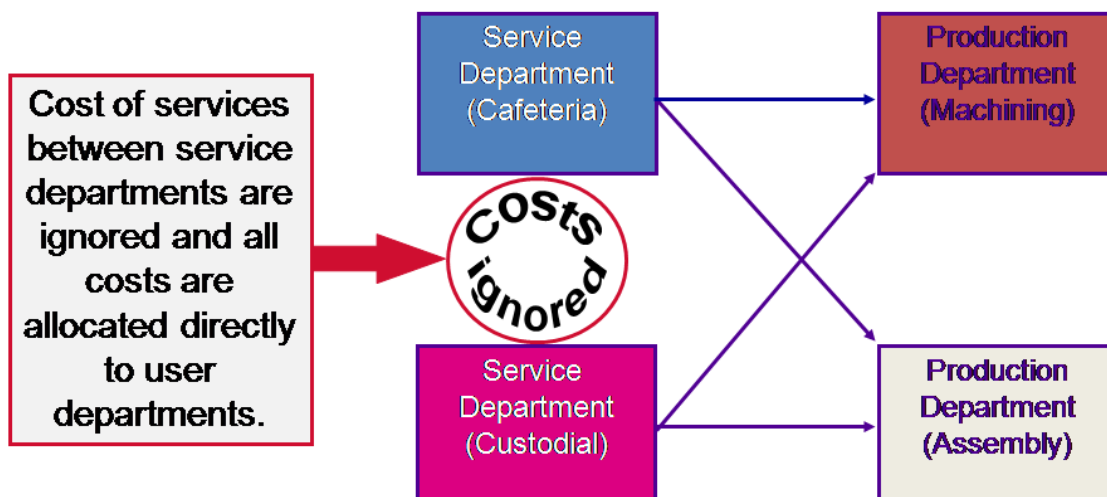
Three approaches are used to allocate the costs of service departments to other departments:

- The direct method,
- The step-down method, and
- The reciprocal method.

#### The direct method

The direct method is the simplest and most common but least accurate of the methods. All service department costs are allocated directly to production departments. It ignores any service rendered by one service department to another, i.e., no attempt is made to allocate the costs of service departments to other service departments. Thus, no allocation is made of the cost of services rendered to other service departments.

## Direct Method





### The step-down method

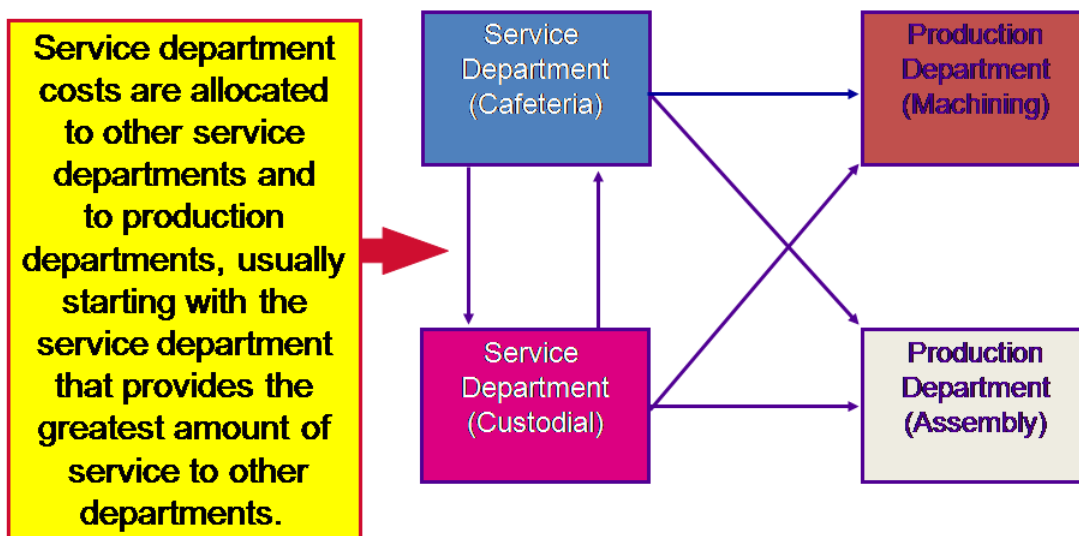
The step-down method is a sequential process. It is slightly more involved than the direct method but is more accurate. The service departments are allocated in order, from the one that provides the most service to other service departments down to the one that provides the least. As each allocation is performed, the costs of the services departments are allocated to both the remaining service departments and the production departments. This method allocates service department costs to other service departments in addition to the producing departments, i.e. it allows for partial recognition of services rendered by a service departments to another.

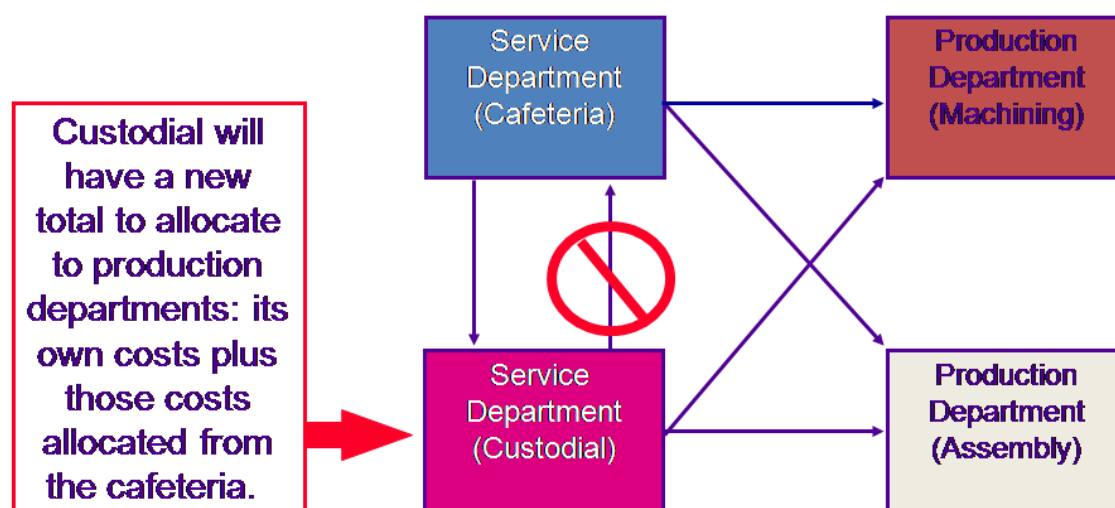
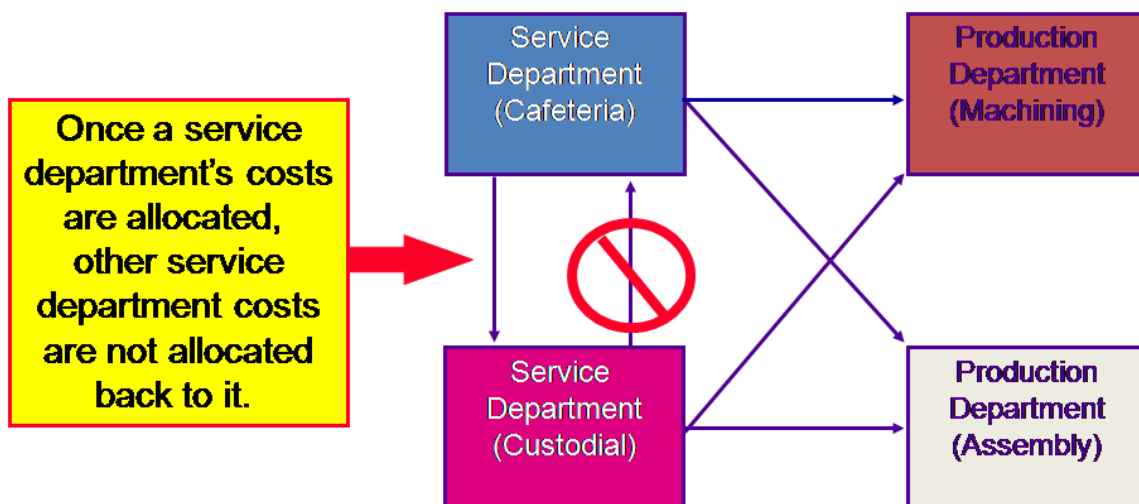
#### Step-down method steps:

##### Begin Allocation:

- With the service department that provides the highest percentage of its total services to other service departments, or
  - With the service department providing services to the greatest number of other service departments, or
  - With the service department having the greatest dollar cost of services provided to other service departments.
- 2) The costs of the remaining service departments are then allocated in the same manner.
  - 3) No cost is assigned back to service departments whose costs have already been allocated.
  - 4) The process continues until all service department costs are allocated.

## Step Method





### The reciprocal method

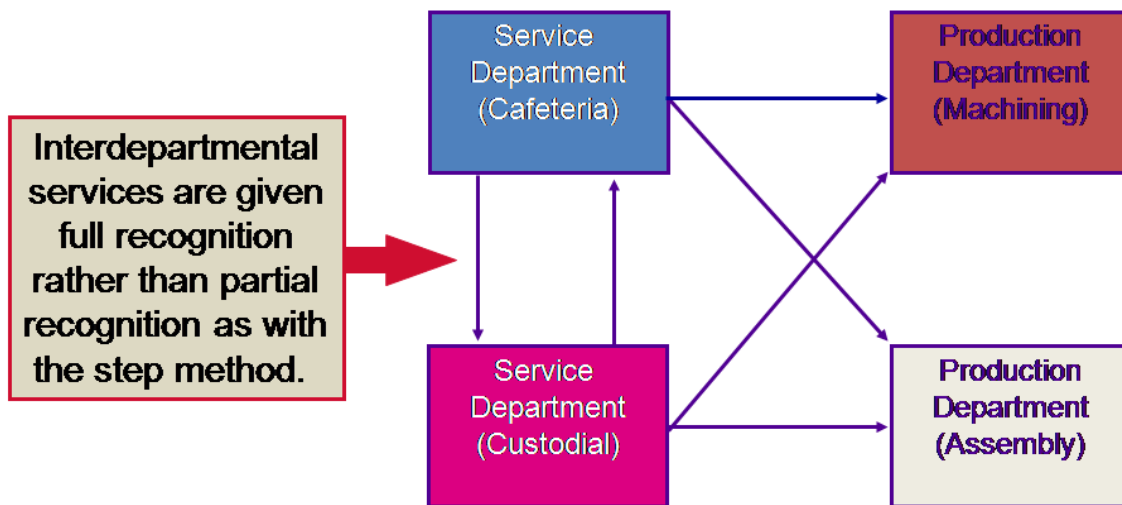
- Theoretically, this method is the most appropriate for allocating service department costs.
- It allows reflection of all reciprocal services among service departments.
- Simultaneous equations are used to compute the completed reciprocated cost.

The reciprocal method is by far the most complex and most accurate of the three methods.

, Simultaneous equations are used to allocate each service department's costs among all other service departments and production departments.



# Reciprocal Method



	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Number of employees	15	10	20	30
Square feet occupied	5,000	2,000	25,000	50,000

Service Department	Allocation Base
Cafeteria	Number of employees
Custodial	Square feet occupied

## The direct method

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	?	?	?	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?





	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	0	144,000	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$360,000 \times \frac{20}{20 + 30} = \$144,000$$

Allocation base: Number of employees

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	0	144,000	216,000
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$360,000 \times \frac{30}{20 + 30} = \$216,000$$

Allocation base: Number of employees

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	0	144,000	216,000
Custodial allocation	0	(90,000)	30,000	?
Total after allocation	\$ 0	\$ 0	\$ 574,000	?

$$\$90,000 \times \frac{25,000}{25,000 + 50,000} = \$30,000$$

Allocation base: Square feet occupied



	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	0	144,000	216,000
Custodial allocation	0	(90,000)	30,000	60,000
Total after allocation	\$ 0	\$ 0	\$ 574,000	\$ 976,000

$$\$90,000 \times \frac{50,000}{25,000 + 50,000} = \$60,000$$

Allocation base: Square feet occupied

## Step Method

We will use the same data used in the direct method example.

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	?	?	?	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	60,000	?	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$360,000 \times \frac{10}{10 + 20 + 30} = \$60,000$$

Allocation base: Number of employees



	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	60,000	120,000	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$360,000 \times \frac{20}{10 + 20 + 30} = \$120,000$$

Allocation base: Number of employees

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	60,000	120,000	180,000
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$360,000 \times \frac{30}{10 + 20 + 30} = \$180,000$$

Allocation base: Number of employees

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	60,000	120,000	180,000
Custodial allocation	?	(150,000)	?	?
Total after allocation	?	\$ 0	?	?

New total = \$90,000 original custodial cost plus \$60,000 allocated from the cafeteria.



	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	60,000	120,000	180,000
Custodial allocation	0	(150,000)	50,000	?
Total after allocation	\$ 0	\$ 0	\$ 570,000	?

$$\$150,000 \times \frac{25,000}{25,000 + 50,000} = \$50,000$$

Allocation base: Square feet occupied

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(360,000)	60,000	120,000	180,000
Custodial allocation	0	(150,000)	50,000	100,000
Total after allocation	\$ 0	\$ 0	\$ 570,000	\$ 980,000

$$\$150,000 \times \frac{50,000}{25,000 + 50,000} = \$100,000$$

Allocation base: Square feet occupied



## Reciprocal Method

The Custodial Department receives:

$$\frac{10}{10 + 20 + 30} = \frac{1}{6} \text{ of Cafeteria costs.}$$

The Cafeteria Department receives:

$$\frac{5,000}{5,000 + 25,000 + 50,000} = \frac{1}{16} \text{ of Custodial costs.}$$

The total cost of each service department is equal to:

Direct costs of that department  
+ Costs allocated to that department

In equation form:

$$\begin{aligned} \text{Cu} &= \$90,000 + \text{Ca} \frac{1}{6} \\ \text{and} \\ \text{Ca} &= \$360,000 + \text{Cu} \frac{1}{16} \end{aligned}$$

Cu = Total costs of Custodial Department  
Ca = Total costs of Cafeteria Department

In equation form:

$$\begin{aligned} \text{Cu} &= \$90,000 + \text{Ca} \frac{1}{6} \\ \text{and} \\ \text{Ca} &= \$360,000 + \text{Cu} \frac{1}{16} \end{aligned}$$

Two equations and two unknowns are solved by substitution:

$$\text{Ca} = \$360,000 + \frac{1}{16} (\$90,000 + \frac{1}{6} \text{Ca})$$

$$\text{Ca} = \$369,474 \text{ (rounded)}$$

and

$$\text{Cu} = \$90,000 + \frac{1}{6} (\$369,474) = \$151,579$$



	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	?	?	?	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(369,474)	61,579	?	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$369,474 \times \frac{10}{10 + 20 + 30} = \$61,579$$

Allocation base: Number of employees

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(369,474)	61,579	123,158	?
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$369,474 \times \frac{20}{10 + 20 + 30} = \$123,158$$

Allocation base: Number of employees



	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(369,474)	61,579	123,158	184,737
Custodial allocation	?	?	?	?
Total after allocation	?	?	?	?

$$\$369,474 \times \frac{30}{10 + 20 + 30} = \$184,737$$

Allocation base: Number of employees

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(369,474)	61,579	123,158	184,737
Custodial allocation	9,474	(151,579)	?	?
Total after allocation	\$ 0	\$ 0	?	?

$$\$151,579 \times \frac{5,000}{5,000 + 25,000 + 50,000} = \$9,474 \text{ (rounded)}$$

Allocation base: Square feet occupied

	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(369,474)	61,579	123,158	184,737
Custodial allocation	9,474	(151,579)	47,368	?
Total after allocation	\$ 0	\$ 0	\$ 570,526	?

$$\$151,579 \times \frac{25,000}{5,000 + 25,000 + 50,000} = \$47,368 \text{ (rounded)}$$

Allocation base: Square feet occupied





	Service Departments		Production Departments	
	Cafeteria	Custodial	Machining	Assembly
Departmental costs before allocation	\$ 360,000	\$ 90,000	\$ 400,000	\$ 700,000
Cafeteria allocation	(369,474)	61,579	123,158	184,737
Custodial allocation	9,474	(151,579)	47,368	94,737
Total after allocation	\$ 0	\$ 0	\$ 570,526	\$ 979,474

$$\$151,579 \times \frac{50,000}{5,000 + 25,000 + 50,000} = \$94,737 \text{ (rounded)}$$

Allocation base: Square feet occupied

## Comparison of Methods

Method	Totals after allocation	
	Machining Department	Assembly Department
Direct	\$ 574,000	\$ 976,000
Step	570,000	980,000
Reciprocal	570,526	979,474

- The reciprocal method is superior because:
  - It considers all services provided to other service departments.
  - The total cost of operating a service department is computed.
- The reciprocal method requires the use of matrix algebra with three or more service departments.





## Cost Allocation and SBU evaluation

A pervasive issue when using cost SBUs is how to allocate the jointly incurred costs of service departments, such as IT, engineering, human resources, or maintenance, to the departments using the service.

The choice of method affects the amount of cost allocated to each cost SBU and therefore is critical in effective cost SBU evaluation.

For example, if the cost of maintenance is allocated based on the square feet of space in each production department, the departments with more space have higher costs. The incentives of such an allocation method are not clear because the production departments likely cannot control the amount of space they occupy. Alternatively, if maintenance costs are allocated on the basis of the number of maintenance jobs requested, the production departments can control their allocated maintenance costs by controlling usage.

**The criteria for choosing the cost allocation method, are the same as the objectives for management control: to**

- (1) motivate managers to exert a high level of effort,
- (2) provide an incentive for managers to make decisions consistent with top management's goals, and
- (3) provide a basis for a fair evaluation of managers' performance.

For example, when management wants to encourage production departments to *reduce* the amount of maintenance, allocation based on usage provides the desired incentive. In contrast, if management wants the departments to increase the use of maintenance to improve the serviceability of the equipment, the most effective incentive might be not to allocate the maintenance cost or perhaps to subsidize it in some way.

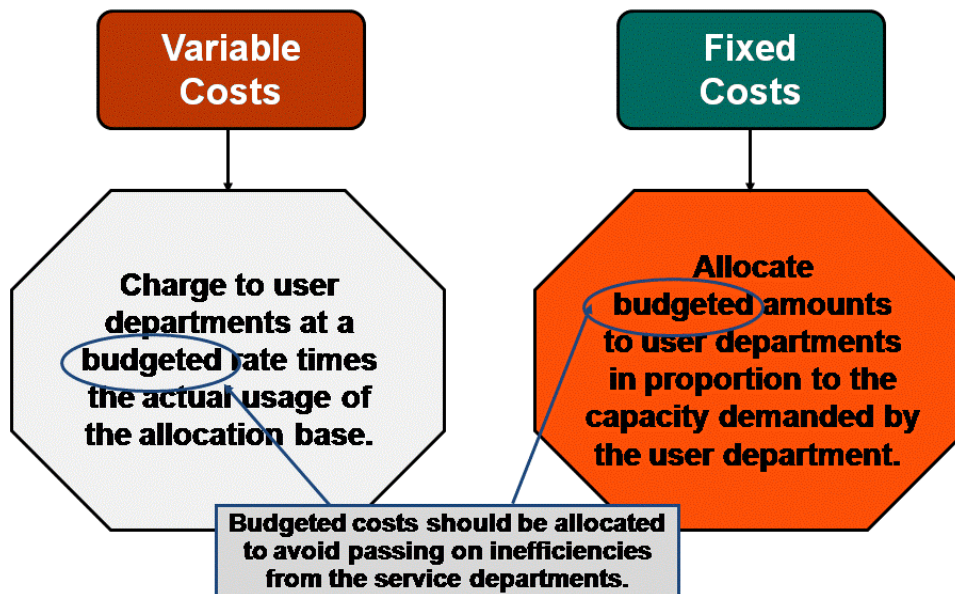
A useful guide in choosing the cost allocation method, in addition to the three criteria just explained, is to use dual allocation. **Dual allocation** is a cost allocation method that separates fixed and variable costs. Variable costs are directly traced to user departments, and fixed costs are allocated on some logical basis.

For example, the variable costs of maintenance, such as supplies, labor, and parts, can be traced to each maintenance job and charged directly to the user department. This approach is both fair and positively motivating. In contrast, the fixed costs of the maintenance department (training, manuals, equipment, etc.) that cannot be traced to each maintenance job should be allocated to the user departments using a basis that fairly reflects each department's use of the service. For example, those departments whose maintenance jobs require more expensive equipment might be allocated a higher proportion of the maintenance department's fixed costs. To improve on dual allocation, indirect costs could be traced to cost SBUs using activity-based costing.

This approach tends to produce the most accurate cost assignment and therefore would be the most motivating and fairest to the SBU managers.



## Separate Fixed and Variable Costs: Dual Allocation



## Separate Fixed and Variable Costs: Dual Allocation

**Ace Co. has a maintenance department and two operating departments: cutting and assembly. Variable maintenance costs are budgeted at \$0.60 per machine hour. Fixed maintenance costs are budgeted at \$200,000 per year. Data relating to the current year are:**

User Departments	Percent of Capacity Demanded	Actual Hours Used
Cutting	60%	80,000
Assembly	40%	40,000
Total hours	100%	120,000

**Allocate maintenance costs to the two operating departments.**



	Cutting Department	Assembly Department
Variable cost allocation:		
$\$0.60 \times 80,000$ hours used	\$ 48,000	
$\$0.60 \times 40,000$ hours used		\$ 24,000
Fixed cost allocation		
Total allocated cost		

**Variable costs are allocated based on hours used.**

	Cutting Department	Assembly Department
Variable cost allocation:		
$\$0.60 \times 80,000$ hours used	\$ 48,000	
$\$0.60 \times 40,000$ hours used		\$ 24,000
Fixed cost allocation		
60% of \$200,000	120,000	
Total allocated cost	\$ 168,000	

**Variable costs are allocated based on hours used.  
Fixed costs are allocated based on  
capacity demanded..**

	Cutting Department	Assembly Department
Variable cost allocation:		
$\$0.60 \times 80,000$ hours used	\$ 48,000	
$\$0.60 \times 40,000$ hours used		\$ 24,000
Fixed cost allocation		
60% of \$200,000	120,000	
40% of \$200,000		80,000
Total allocated cost	\$ 168,000	\$ 104,000

**Variable costs are allocated based on hours used.  
Fixed costs are allocated based on  
capacity demanded..**



## STUDY UNIT SEVEN OPERATIONAL EFFICIENCY AND BUSINESS PROCESS PERFORMANCE

### Just-in-time

#### Definitions:

**Just-in-time system** :A comprehensive production and inventory system that purchases or produces materials and parts only as needed and just in time to be used at each stage of the production process.

**Just-in-time (JIT) production (Also called *lean production*)**: Demand-pull manufacturing system in which each component in a production line is produced as soon as and only when needed by the next step in the production line..

**Just-in-time (JIT) purchasing**: The purchase of goods or materials so that they are delivered just as needed for production.

**Just-In-Time Inventory management systems** are based on a manufacturing philosophy that combines purchasing, production and Inventory control into one function.

#### Purpose

- minimize the level of inventories because many-inventory-related activities are viewed as nonvalue-added.
- meet customer demand in a timely manner, with high-quality products, and at the lowest possible cost, Higher productivity, reduced order costs as well as carrying costs, faster and cheaper setups, shorter manufacturing cycle times, better due date performance, improved quality, and more flexible processes are objectives of JIT methods.
- The ultimate objectives are increased competitiveness and higher profits.

#### JIT (Demand Pull ) System vs. Traditional (push) systems

In a push system, a department produces and sends all that it can to the next step for further processing, which means that the manufacturer is producing something without understanding consumer demand. This can result in large, useless stocks of inventory. The main Idea of JIT is that nothing is produced until the next process in the assembly line needs it. This demand-pull feature requires close coordination between workstations.

#### Benefits

- **Reduction in the cost of carrying the inventory** and reduces nonvalue adding activities.
- Greater emphasis on **improving quality** by eliminating the causes of rework, scrap and waste.
- **Setup times are decreased.**
- **Lower investments in space**
- Higher quality and lower inventory go together.
- JIT increases inventory turnover ( $\text{cost of sales} \div \text{average inventory}$ ) and decreases inventory as a percentage of total assets.
- Backflush costing is utilized with just-in-time production as a planning and control system. Backflush costing is less costly to operate than most traditional costing systems.

**The minimization of inventory reduces the number of suppliers, storage costs, transaction costs, etc**



### Limitations

- an increased **risk of stockout costs**
- JIT implementation is not appropriate for high-mix manufacturing environments, which often have thousands of products and dozens of work centers.

### Carrying costs vs. Stockout costs

The objective of a JIT system is to reduce carrying costs by eliminating inventories and increasing the deliveries made by suppliers. Ideally, shipments are received just in time to be incorporated into the manufacturing process. This system increases the risk of stockout costs because the inventory buffer is reduced or eliminated.

### Characteristics of JIT Systems

The major characteristics of a JIT environment are:

- **Production organized into manufacturing work cells**
- **Multiskilled workers**
- **Reduced setup times**
- **Reduced manufacturing lead times**
- **Reliable suppliers**
  - Buyer-supplier relationships are further facilitated by electronic data interchange (EDI), a technology that allows the supplier access to the buyer's online inventory management system. Thus, electronic messages replace paper documents (purchase orders and sales invoices), and the production schedules and deliveries of the parties can be more readily coordinated.
  - The use of just-in-time production generally involves developing relationships with a minimum number of suppliers that reliably deliver high quality products.

### kanban

A set of control cards used by workers to signal the need for materials and products to move from one operation to the next in an assembly line

Kanban is one of the many elements in the JIT system. It means "ticket," "card," or "sign" or "visual record" or "markers" in Japanese. Workers respond only after receiving a kanban. When production is complete, the kanban is attached to the finished order and sent downstream to the next work cell.

## Material requirements or Material Resource planning (MRP)

### Definition

It is an approach that uses computer software to help manage a manufacturing process. MRP is a "Push-through" system that manufactures finished goods for inventory on the basis of demand forecasts.

- In MRP systems, a master production schedule indicates the quantities and timing of each part to be produced. Once the scheduled production run begins, departments push output through a system, regardless of whether that output is needed.

### Benefits of MRP Systems

The benefits of MRP systems include:

- Less coordination required between functional areas; everyone follows the bill of materials.
- Scheduling improvements; levels load when demand is variable or relatively unpredictable.
- Predictable raw material needs; can take advantage of bulk purchasing and other price breaks.
- More efficient inventory control; schedules to use up raw materials or build finished goods.
- Additional inventory on hand to cover orders should product be damaged or lost in transit to a customer.
- Quick response to new customer demand; can supply new customers from existing inventory rather than building product after the order is received.



- Better manufacturing process control; minimizes retooling and machine setup time.
- Reduced idle time.
- Lower setup costs.
- Lower inventory carrying costs.
- Increased flexibility in responding to market change

### **Limitations**

The primary disadvantage of an MRP environment is potential inventory accumulation. Workstations may receive parts that they are not ready to process.

**Manufacturing resource planning (MRP II)** is a closed-loop manufacturing system that integrates all facets of a manufacturing business, including production, sales, inventories, . schedules, and cash flows.. The same system is used for both the financial reporting and managing operations (both use the same transactions and numbers). Because manufacturing resource planning encompasses materials requirements planning, MRP is a component of an MRP system.

## **Outsourcing**

### **Definition**

Process of purchasing goods and services from outside vendors rather than producing the same goods or providing the same services within the organization. For smaller business, outsourcing may provide access to resources and expertise for capabilities they may not have internally. For larger businesses, outsourcing can improve specific functions.

### **Benefits**

- By Outsourcing certain functions to a specialist, management can free up resources within the company in order to focus on the primary operations of the company and strategic revenue-generating activities.
- It may also be cheaper to outsource a function to a company that specializes in an area than It Is to run and support that function internally.
- Benefits of outsourcing include reliable service, reduced costs, avoidance of the risk of obsolescence, and access to technology.
- Can improve efficiency and effectiveness by gaining outside expertise or scale
- Can provide access to current technologies at reasonable cost without the risk of obsolescence
- Can reduce expenses by gaining capabilities without incurring overhead costs (for example, staffing, benefits, space)
- May improve the quality and/or timeliness of products or services

### **Limitations**

Despite many attractive advantages, outsourcing is not the answer for all activities or functions and should consider the following key cautions: May cost more to go outside for specific expertise

- Can result in a loss of in-house expertise and capabilities
- Can reduce process control
- May reduce control over quality
- May lead to less flexibility (depending on the external supplier)
- May result in less-personalized service
- Creates privacy and confidentiality issues
- Can result in “giving knowledge away” and lead to competitors obtaining expertise, scale, customers, etc.
- Potential for employee morale and loyalty issues





## Theory of constraints (TOC) and throughput costing

### Definition

An analysis of operations that improves profitability and cycle time by identifying the bottleneck in the operation and determining the most profitable product mix given the bottleneck

According to the theory of constraints, increasing the efficiency of operations at non-bottleneck machines will make the slowdowns at bottlenecks worse as it will increase the traffic at bottlenecks.

Theory of Constraints is an important way for a company to speed up its manufacturing time so it can improve its customer response time and its profitability

Manufacturing cycle time, also called manufacturing lead time or throughput time, is defined as

- the amount of time between the receipt of a customer order the shipment of the order.
- Duration between the time an order is received by manufacturing to the time it becomes a finished good.

### Drum-Buffer-Rope System

The drum-buffer-rope (PBR) system is a TOC method for balancing the flow of production through the constraint thereby reducing the amount of inventory at the constraint and improving overall productivity .

**The drum** connotes the constraint, the rope is the sequence of processes prior to and including the constraint, and the buffer is the minimum amount of work-in-process input needed to keep the drum busy.

The objective of the drum-buffer-rope system is to keep the process flow running smoothly through the constraint by careful timing and scheduling of the processes in the rope leading up to the constraint.

### The steps in a TOC analysis are as follows:

1. Identify the constraint.
2. Determine the most profitable product mix given the constraint.
3. Maximize the flow through the constraint.
4. Increase capacity at the constraint. .
5. Redesign the manufacturing process for greater flexibility and speed.

### Basic Principles in the Theory of Constraints

- **Throughput** is product produced and shipped.
- **Throughput time** or **manufacturing cycle time** is the time that elapses between the receipt of a customer's order and the shipment of the order.
- **Throughput contribution margin** Is revenue minus direct materials cost for a given period of time.
- **Only strictly variable costs which are usually only direct materials are considered Inventory costs.** All other costs, even direct labor, are considered operating, or fixed, costs.
- **Theory of Constraints assumes that operating costs are fixed costs** because it regards them as difficult to change in the short run.
- **Theory of Constraints focuses on short-run maximization of throughput contribution margin** by managing operations at the constraint In order to improve the performance of production as a whole.
- Three items that are measured in the theory of constraints are throughput contribution, inventory (or investments), and operating expenses.
  - $\text{Throughput contribution} = \text{Sales revenue} - \text{Direct material costs}$
  - $\text{Inventory} = (\text{Materials costs in direct materials, Work-in-process, and Finished goods inventories}) + (\text{R \& D costs}) + (\text{Costs of equipment and buildings})$
  - $\text{Operating expenses} = \text{All costs of operations, not including direct materials}$



## TOC vs. ABC (complementary analytical tools)

	TOC	ABC
Main Objective	Short-term focus: through put margin analysis based on materials and materials-related costs	Long-term focus; analysis of all product costs, concerned with strategic pricing and profit planning
Resource constraints	Included explicitly, a principal focus of TOC	Not included explicitly
Cost drivers	No direct utilization of cost drivers	Develop an understanding of cost drivers at all levels
Major Use	Optimization of production flow and short-term product mix	Strategic pricing and profit planning

## Capacity management and analysis

### Intro

A key issue in costing is choosing the capacity level for computing the allocation of manufacturing overhead. Determining the correct level of capacity to use is a difficult strategic decision for managers. The choice of capacity level used to allocate overhead can have a great effect on product cost information used by managers.

### Excess capacity vs. too little capacity

If a company has capacity in excess of what it needs, then it will incur large costs of unused capacity. Likewise, if a company has too little capacity to meet demand, then it may have trouble filling customer orders.

### Four choices to determine the output level

In general, a company has four choices to determine the output level. Two relate to what the plant can **supply**; and two relate to the **demand** to the plant's output. These are called **denominator-level capacity concepts**, because they describe the denominators that can be used in the calculation of per unit overhead costs.

### Supply Denominator-Level Concepts

Theoretical or Ideal (perfect ) capacity  
Practical (or currently attainable) capacity

### Demand Denominator-Level Concepts

Master budget capacity utilization (or expected actual capacity utilization)  
Normal capacity utilization

## Contemporary Productivity Approaches (Technique / Description)

### Automation/robots

Uses reprogrammable, multifunctional robots (machines) designed to manipulate materials, parts, tools, or specialized devices through variable programmed motions  
Applies robots to the performance of a variety of repetitive tasks





### **Capacity management and analysis (capacity planning)**

Represents an important decision-making area involving strategic, tactical, and operational aspects

Includes an iterative procedure that:

Reviews long-term demand forecasts

Translates forecasts into capacity requirements

Matches the capacity requirements to present facilities Identifies mismatches between capacity requirements and projected availability

Devises plans to overcome mismatches and selects the best alternative

### **Computer-aided design (CAD)**

Uses computers in product development, analysis, and design modification to improve the quality and performance of the product

Usually entails the drawing or physical layout steps of engineering design

### **Computer-aided manufacturing (CAM)**

Applies the computer to the planning, control, and operation of a production facility

### **Computer- integrated manufacturing (CIM)**

Involves a manufacturing system that completely integrates all factory and office functions within a company via a computer-based information network

Uses computers to control the integration and flow of information between design, engineering, manufacturing, logistics, warehousing and distribution, customers and suppliers, sales and marketing activities, and accounting

Facilitates hour-by-hour manufacturing management

### **Concurrent engineering (simultaneous engineering)**

Integrates product or service design with input from all business units and functions throughout a product's or service's life cycle.

Emphasizes upstream prevention versus downstream correction.

Attempts to balance the needs of all parties in product or service design while maintaining customer requirements

### **Flexible manufacturing system (FMS)**

Uses a computerized network of automated equipment that produces one or more groups of parts or variations of a product in a flexible manner

## **Value-chain analysis**

### **Definition**

#### **Value chain**

The sequence of business functions in which usefulness is added to the products of services of a company.

#### **Value-chain analysis**

A strategic analysis tool used to

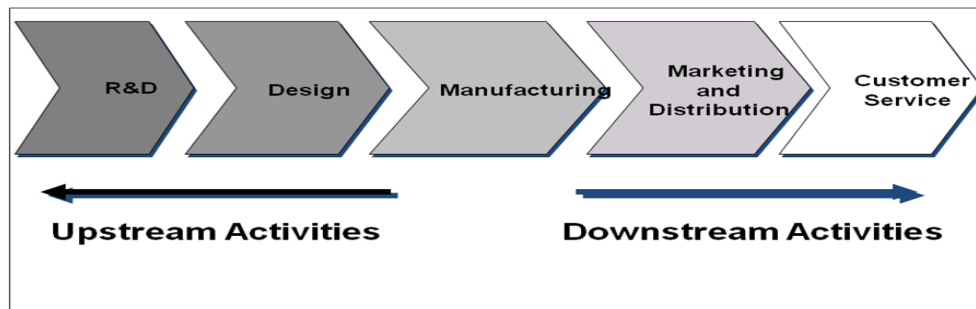
- identify where value to customers can be increased or costs reduced, and
- to better understand the firm's linkages with suppliers, customers, and other firms in the industry.
  - Because the value chain identifies and connects the organization's strategic activities, value chain analysis improves the firm's knowledge of its relations with customers; suppliers, and competitors.
- It also facilitates the strategic determination of the phase(s) of the industry's Value chain in which the firm should operate.
- to focus on those activities that are consistent with its overall strategy.



- help an organization gain competitive advantage by identifying what steps or activities do and do not increase the value to the customers.
  - Once those areas are identified, the organization can increase the related benefits, or reduce (even eliminate) non value-added activities. The increase in value to the customer and/or the decrease in production costs will make the company more competitive..
- offers an excellent opportunity to integrate strategic planning and management accounting to guide the firm to survival and growth.

### **The business functions in the value chain are**

- **Research and development**—generating and experimenting with ideas related to new products, services, or processes.
- **Design of products, services, and processes**—the detailed planning and engineering of products, services, or processes.
- **Production**—acquiring, coordinating, and assembling resources to produce a product or deliver a service.
- **Marketing**—promoting and selling products or services to customers or prospective customers.
- **Distribution**—delivering products or services to customers.
- **Customer service**—providing after-sale support to customers.



### **Steps in Value Chain Analysis**

There are **three steps in value chain analysis**:

1) **Identify the activities that add value to the finished product.** These activities depend upon the industry and what the company does (manufacturing, resale, etc.). They will be whatever activities this firm and firms in its industry perform in the processes of designing a product or service, manufacturing the product, marketing it and providing customer service after the sale.

2) **Identify the cost driver** or cost drivers for each activity, and

3) **Develop a competitive advantage by adding value to the customer or reducing the costs of the activity.**

### **Value chain and supply chain analysis**

**Supply chain** describes the flow of goods, services, and information from the initial sources of materials and services to the delivery of products to consumers, regardless of whether those activities occur in the same organization or in other organizations.

Cost management is most effective when it integrates and coordinates activities across all companies in the supply chain as well as across each business function in an individual company's value chain. Attempts are made to restructure all cost areas to be more cost-effective.

Value chain and supply chain analysis performed by the management accounting function can contribute to the achievement of key success factors. When each business function adds value and all business functions are coordinated and well integrated, it contributes to cost control, high quality, timely response, and innovation.



**Value engineering** is a systematic evaluation of all aspects of the value-chain business functions, with the objective of reducing costs while satisfying customer needs. Value engineering via improvement in product and process designs is a principal technique that companies use to achieve target costs per unit.

## Value-added concepts

### Intro

Process value analysis is a comprehensive understanding of how an organization generates its output. It involves a determination of which activities that use resources are value-adding or nonvalue-adding and how the latter may be reduced or eliminated.

### Definition

#### High-value-added activity

**A high-value-added activity** increases significantly the value of the product or service to the customers. Removal of a high-value-added activity decreases perceptively the value of the product or service to the customer. Such an activity may be mandated (e.g., a regulatory requirement) or discretionary.

#### **High-value-added activities are those:**

- That are necessary or required to meet customer requirements or expectations.
- That enhance purchased materials or components of a product.
- That contribute to customer satisfaction.
- That are critical steps in a business process.
- That are performed to resolve or eliminate quality problems.
- That are performed upon request of a satisfied customer.
- That you would do more of, if time permitted.

**Examples :** Inserting a flange into a part, pouring molten metal into a mold, and preparing a field for planting are examples of high-value-added activities. Installing software to protect a computer from spam is a high-value-added activity to customers annoyed by bombardments of unwanted e-mail. Designing, processing, and delivering products and services are high-value-added activities.

**Value-added cost** A value-added cost is incurred to perform a value-added activity without waste. It is a cost that customers perceive as adding value, or utility, to a product or service. Examples are costs of materials, direct labor, tools, and machinery.

#### Low-value-added activity

**A low-value-added activity** consumes time, resources, or space, but adds little in satisfying customer needs. If eliminated, customer value or satisfaction decreases imperceptively or remains unchanged. Moving parts between processes, waiting time, repairing, and rework are examples of low-value-added activities.

#### **Low-value-added activities are those that:**

- Can be eliminated without affecting the form, fit, or function of the product or service.
- Begin with prefix "re" (such as rework or returned goods).
- Result in waste and add little or no value to the product or service.
- Are performed due to inefficiencies or errors in the process stream.
- Are duplicated in another department or add unnecessary steps to the business process.
- Are performed to monitor quality problems.
- Are performed due to a request of an unhappy or dissatisfied customer.
- Produce an unnecessary or unwanted output.
- If given the option, you would prefer to do less of.



**A nonvalue-added cost** is caused by a nonvalue-added activity or inefficient performance of a value-added activity. It is a cost that customers do not perceive as adding value, or utility, to a product or service. Examples of nonvalue-added costs are costs of rework, scrap, expediting, and breakdown maintenance.

### **A Classification of High-Value-Added and Low-Value-Added Activities**

Activity	High-Value-Added	Low-Value-Added
Designing product	X	
Setting up		X
Waiting		X
Moving		X
Processing	X	
Reworking		X
Repairing		X
Storing		X
Inspecting		X
Delivering product	X	

### **Examples**

Value-added costs: Materials and labor for regular repairs

Nonvalue-added costs: Rework costs, expediting costs caused by work delays, breakdown maintenance of equipment

Gray area: Materials handling costs, Materials procurement and inspection costs, Preventive maintenance of equipment

Classifications of value-added, nonvalue-added, and gray area costs are often not clear-cut. Other classifications of some of the cost categories are also plausible. For example, some students may include materials handling, materials procurement, and inspection costs and preventive maintenance as value-added costs (costs that customers perceive as adding value and as being necessary for good repair service) rather than as in the gray area. Preventive maintenance, for instance, might be regarded as value-added because it helps prevent nonvalueadding breakdown maintenance.

The selection of value-added activities in each place of the value chain reflects the firm's determination of its competitive advantage and its choice of competitive strategy. For example, different design strategies require different activities and costs. A firm might choose to be the low-cost producer of an undifferentiated product rather than compete on the basis of superior product quality.

## **Activity-based management (ABM)**

### **Intro**

The linkage of product costing and continuous improvement of processes is activity-based management (ABM). ABM redirects and improves the use of resources to increase the value created for customers and other stakeholders. It encompasses activity analysis, cost driver analysis, and quality performance measurement.

- Kaizen is the Japanese word for the continuous pursuit of improvement in every aspect of organizational operations. For example, a budget prepared on the kaizen principle projects costs based on future improvements. The possibility of such improvements must be determined, and the cost of implementation and the savings there from must be estimated.

### **Definition**

Management decisions and activity analysis that use activity-based costing information to satisfy customers and improve operational control, management control and profitability.



### Activity-Based Management (ABM)

- manages activities to improve the value of products or services to customers and increase the firm's competitiveness and profitability.
  - ABM draws on ABC as its major source of information and focuses on the efficiency and effectiveness of key business processes and activities.
- Using ABM, management can pinpoint avenues for improving operations, reducing costs, or increasing values to customers.
- By identifying resources spent on customers, products, and activities, ABM improves management's focus on the firm's critical success factors and enhances its competitive advantage.

### ABM applications can be classified into two categories: operational ABM and strategic ABM.

- **Operational ABM** enhances operation efficiency and asset utilization and lowers costs; its focuses are on doing things right and performing activities more efficiently.
  - Operational ABM applications use management techniques such as activity management, business process reengineering, total quality management, and performance measurement.
- **Strategic ABM** attempts to alter the demand for activities and increase profitability through improved activity efficiency.
  - Strategic ABM focuses on choosing appropriate activities for the operation, eliminating nonessential activities and selecting the most profitable customers. Strategic ABM applications use management techniques such as process design, customer profitability analysis, and value chain analysis.

### Advantages and Disadvantages of ABM

#### ABM has the following advantages over traditional cost management techniques:

- Uses continuous improvement to maintain the firm's competitive advantage
- Allocates more resources to activities, products, and customers that add more value, strategically redirecting management focus
- Eliminates non-value-added activities.
- Measures process effectiveness and identifies areas to reduce costs or increase customer value.
- Works well with just-in-time processes.
- Ties performance measurement to ABC to provide consistent incentives for using ABC.

#### ABM has the following disadvantages when compared to traditional cost management:

- Changing to ABC/ABM will result in different pricing, process design, manufacturing technology, and product design decisions, and the company must be prepared to support managers who embrace these methods and discourage managers who continue to use the older methods.
- ABC/ABM is not used for external financial reporting, and needing to prepare reports using traditional methods may influence management decision making enough to dilute the impact of ABC/ABM.
- Implementing ABC/ABM is expensive and time-consuming, so a cost-benefit analysis should be done to identify all hidden costs and benefits.

## Process analysis and business process reengineering

### Intro

Technological advances have increased the popularity of business process reengineering. Process improvements and productivity gains achieved through total quality management (TQM) are generally incremental gains achieved by tweaking a system and reducing inputs. In contrast, process reengineering and business process reengineering offer deeper, more sweeping gains.



## Definition

### Process

A **process** is how something is accomplished in a firm. It is a set of activities directed toward the same objective. A process is an activity or a group of interrelated activities that takes an input of materials and/or resources, adds value to it, and provides an output to internal or external customers.

### Reengineering

Is process innovation and core process redesign. Instead of improving existing procedures, it finds new ways of doing things. Thus, reengineering should be contrasted with **process improvement**.

### Process improvement

Consists of incremental but constant changes that improve efficiency.

### Process reengineering

Process reengineering diagrams a process in detail, evaluates and questions the process [low, and then completely redesigns the process to eliminate unnecessary steps, reduce opportunities for errors, and reduce costs. All activities that do not add value are eliminated.

### Process analysis

a collection of analytic methods that can be used to examine and measure the basic elements for a process to operate. It can also identify those processes with the greatest need for improvement.

### Process analysis looks at the linkage of quality, productivity, and process improvements:

- Productivity implies trying to improve upon what already exists.
- Improving productivity requires continuous quality improvement.
- Continuous improvement necessitates ongoing organizational learning, process improvements, and reengineering.

These continuous productivity improvements, then can help an organization be competitive in the long term.

### Business process reengineering (BPR)

Is a complete rethinking of how business functions are performed to provide value to customers, that is, radical innovation instead of mere improvement, and a disregard for current jobs, hierarchies, and reporting relationships.

Business process reengineering (BPR) is the fundamental analysis and radical redesign of business processes within and between enterprises to achieve dramatic improvements in performance (for example, cost, quality, speed, and service). BPR promotes the idea that sometimes wiping the slate clean and radically redesigning and reorganizing an enterprise is necessary to lower costs and increase the quality of a product or service.

### BPR involves changes that are:

**Fundamental** — BPR forces people to look at tacit rules and assumptions underlying the way they currently do business. Firms must answer two questions: Why do we do what we do? Why do we do it the way we do it?

**Radical** — BPR is about reinvention, not improvement or modification. A radical redesign means disregarding existing processes and inventing new ways of doing work.

**Dramatic** — BPR is not for the faint at heart. It should be used when the need for “heavy blasting” is required to alleviate a dire situation. If you need only a slight bump in process improvement, there is no need to reengineer.

**Process** — BPR is about a process orientation with a heavy emphasis on the chain of activities that take input and create output of value to the customer.

Accordingly, BPR techniques eliminate many traditional controls. They exploit modern technology to improve productivity and decrease the number of clerical workers. Thus, the emphasis is on developing controls that are automated and self-correcting and require minimal human intervention.





The emphasis therefore shifts to monitoring internal control so management can determine when an operation may be out of control and corrective action is needed. Most BPR techniques also assume that humans will be motivated to work actively in improving operations when they are full participants in the process.

Monitoring-assesses the quality of internal control over time. Management considers whether internal control is properly designed and operating as intended and modifies it to reflect changing conditions, Monitoring may be in the form of separate, periodic evaluations or of ongoing monitoring. Ongoing monitoring occurs as part of routine operations. It includes management and supervisory review, comparisons, reconciliations, and other actions by personnel as part of their regular activities.

A major disadvantage of business process reengineering is that as processes are changed to be more efficient, the internal controls that were established previously can be ignored or overlooked and may not be replaced with new controls.

## **Benchmarking**

### **Definition**

a continuous, systematic process of measuring products, services, and practices against the best levels of performance. Thus helping an organization to be competitive.

Benchmarking is an ongoing process that entails quantitative and qualitative measurement of the difference between the company's performance of an activity and the performance by the best in the world. The benchmark organization need not be a competitor.

### **Mechanism**

It analyzes and measures the key outputs of a business process or function against the best and also identifies the underlying key actions and root causes that contribute to the performance difference.

Many people think of benchmarking as simply capturing best-in-class information, but the practice has a much wider application. Quite often, best-in-class levels are comparisons to external benchmarks of industry leaders. However, they may also be based on internal benchmarking information or measures from other organizations (outside an industry) that have similar processes.

### **Benchmarking phases**

- 1) Select and prioritize benchmarking projects.
- 2) The next phase is to organize benchmarking (cross functional) teams.
- 3) Documenting own work process: determining relevant benchmarking measurements
- 3) Researching and identifying best-in-class performance
- 4) Analyzing benchmarking data: The data analysis phase entails identifying performance gaps, understanding the reasons they exist; and prioritizing the key activities that will facilitate the behavioral and process changes needed to implement the benchmarking study's recommendations.
- 5) The implementation phase (Leadership is most important).

### **Benchmarking and Creating Competitive Advantage**

Benchmarking studies in various forms (best practice, functional, process, and competitive) were freely conducted, generally without a context. Invalid comparisons were often made (for example, comparing the growth of a highly leveraged company to one internally financed from earnings, or comparing the growth of a company in a low-cost environment to one in Silicon Valley). Given such misapplications, most of these benchmarking studies were not particularly cost-effective. However, well-designed and properly applied benchmarking can be a powerful tool in helping an organization to be competitive.

Through benchmarking, a firm identifies best-in-class levels and conducts a study to determine how those levels can be adopted and lead to improved performance. It provides a rational method for setting performance goals and gaining market leadership; important decisions are based on facts and data, rather than on emotions. Because benchmarking is based on what the best are doing, it provides an accurate assessment of what needs to change.



## Cost of quality analysis

The costs of quality (COQ) refer to the costs incurred to prevent, or the costs arising as a result of, producing a low-quality product. Costs of quality are classified into four categories; examples for each category are listed in the next Exhibit.

1. Prevention costs-costs incurred to preclude the production of products that do not conform to specifications.
2. Appraisal costs-costs incurred to detect which of the individual units of products do not conform to specifications.
3. Internal failure costs-costs incurred on a defective product before it is shipped to customers.
4. External failure costs-costs incurred on a defective product after it is shipped to customers.

### Items Pertaining to Costs-at-Quality Reports

Prevention Costs	Appraisal Costs	Internal Failure Costs	External Failure Costs
Design engineering	Inspection	Spoilage	Customer support
Process engineering	Online product	Rework	Manufacturing/
Supplier evaluations	manufacturing	Scrap	process
Preventive equipment	and process	Machine repairs	engineering
maintenance	inspection	Manufacturing/	for external
Quality training	Product testing	process	failures
Testing of new		engineering on	Warranty repair
materials		internal failures	costs
			Liability claims

SMA 4R lists four categories of **costs of quality**: prevention, appraisal, internal failure, and external failure. An organization should attempt to minimize its total cost of quality.

a. **Conformance costs** include prevention and appraisal, which are both financial measures of internal performance.

- 1) **Prevention** attempts to avoid defective output. These costs include preventive maintenance, employee training, review of equipment design, and evaluation of suppliers.
  - Prevention costs are the costs of quality system design, implementation, and maintenance, including audits of the quality system itself. Examples include quality planning, review of new products, surveys of supplier capabilities, team meetings for quality, and training for quality, as well as related to ensuring the quality or quality improvement of the product: market research, product testing, and product design.
- 2) **Appraisal** embraces such activities as statistical quality control programs, inspection, and testing.
  - Appraisal costs are the costs of auditing processes for quality, including formal and informal measurements and evaluations of quality levels and setting quality standards and performance requirements. Examples include inspection and testing of raw materials, work-in-process and finished goods testing, calibration of equipment, and audits of operations or services. In addition, they address more externally focused costs such as monitoring market reaction and competitors' products.

b. **Nonconformance costs** include costs of internal failure (a financial measure of internal performance) and external failure costs (a financial measure of customer satisfaction).

- 1) **Internal failure** costs occur when defective products are detected before shipment.





a) Examples are scrap, rework, tooling changes, downtime, redesign of products or processes, lost output, reinspection and retesting, expediting of operations after delays, lost learning opportunities, and searching for and correcting problems.

Internal failure costs include the costs involved with defective products and components that are caught before shipping them to the customer. Examples include scrap, rework, spoilage, retesting, and reinspection. They also include systemic problems such as the inability to meet the design, manufacturing, and service standards identified for the product.

2) The costs of **external failure** or **lost opportunity** include lost profits from a decline in market share as dissatisfied customers make no repeat purchases, return products for refunds, cancel orders, and communicate their dissatisfaction to others.

a) Thus, external failure costs are incurred for customer service complaints; rejection, return, repair, or recall of products or services; warranty obligations; products liability claims; and customer losses.

b) **Environmental costs** are also external failure costs, e.g., fines for nonadherence to environmental law and loss of customer goodwill.

External failure costs are the costs involved with shipping a defective product to a customer. Examples include customer complaints, returns, product recalls, and warranty claims.

Overall, these costs relate to an inability to meet customer perceptions for product quality and service.

i) To minimize environmental damage and its resulting costs, the International Organization for Standardization has issued **ISO 14000** standards to promote the reduction of environmental damage by an organization's products, services, and operations and to develop environmental auditing and performance evaluation systems.

## Continuous improvement concepts

The term **kaizen** is a Japanese word that means "improvement." As used in business, it implies "continuous improvement," or slow but constant incremental improvements being made in all areas of business operations. Small-scale improvements are considered to be less risky than a major overhaul of a system or process. The slow accumulation of small developments in quality and efficiency can, over time, lead to very high quality and very low costs. **Kaizen** needs to be a part of the corporate culture. It requires conscious effort to think about ways that tasks could be done better. This can be difficult to maintain and takes years to show results, but if done properly, it confers a sustained competitive advantage.

**Kaizen** also has something to say about standards in manufacturing. If you recall, we said that standard costs may be either **Ideal standards**, attainable only under the best possible conditions, or **practical, expected costs**, which are challenging to attain, but attainable under normal conditions. Toyota, the company most recognized for its use of **kaizen**, would say that standards are temporary and not absolutes. Improvement is always possible, and the goal is to attain the **ideal standard**. Even though practical standards are being attained, the ultimate goal is still not being achieved.

**Ideal standards have been adopted by some companies that apply continuous improvement and other total quality management principles.**

A company may use **target costing** along with **kaizen** principles to determine what its ideal standard costs are. This puts the focus on the market because it starts with a **target price** based on the market price. The market determines the target price, and the company must attain the target cost in order to realize its desired profit margin for the product. The Ideal standard is thus defined as the target cost, or the standard cost that will enable the company to attain its desired cost and desired profit margin. Using **Kaizen** principles, the company figures out how it can manufacture the product for the target cost. The standard is achieved through development of new manufacturing methods and techniques that entail continuous improvement Or the ongoing search for new ways to reduce costs.

Implementing ideal standards and quality improvements is the heart of the **kaizen** concept. **Kaizen** challenges people to imagine the ideal condition and strive to make the necessary improvements to achieve that ideal.



# Glossary

(based on ICMA suggested reading list)



**Abnormal spoilage.** Spoilage that would not arise under efficient operating conditions; it is not inherent in a particular production process.

**absolute quality conformance (robust quality approach)** Conformance that requires all products or services to meet the target value exactly with no variation

**Absorption costing.** Method of inventory costing in which all variable manufacturing costs and all fixed manufacturing costs are included as inventoriable costs.

**Absorption costing** A costing method that includes all manufacturing costs—direct materials, direct labor, and both variable and fixed manufacturing overhead—in the cost of a product

**Absorption costing** A costing method that includes all manufacturing costs—direct materials, direct labor, and both variable and fixed manufacturing overhead—in unit product costs.

**Account analysis** A method for analyzing cost behavior in which an account is classified as either variable or fixed based on the analyst's prior knowledge of how the cost in the account behaves.

**Activity.** An event, task, or unit of work with a specified purpose.

**Activity** An event that causes the consumption of overhead resources in an organization.

**activity analysis** The development of a detailed description of the specific activities performed in the firm's operations

**Activity base** A measure of whatever causes the incurrence of a variable cost. For example, the total cost of X-ray film in a hospital will increase as the number of X-rays taken increases. Therefore, the number of X-rays is the activity base that explains the total cost of X-ray film.

**Activity-based costing (ABC).** Approach to costing that focuses on individual activities as the fundamental cost objects. It uses the costs of these activities as the basis for assigning costs to other cost objects such as products or services.

**activity-based costing (ABC)** A costing approach that assigns resource costs to cost objects based on activities performed for the cost objects

**Activity-based costing (ABC)** A costing method based on activities that is designed to provide managers with cost information for strategic and other decisions that potentially affect capacity and therefore fixed as well as variable costs.

**Activity-based management (ABM).** Method of management decision-making that uses activity-based costing information to improve customer satisfaction and profitability.

**activity-based management (ABM)** Uses activity analysis and activity-based costing to help managers identify the value of activities and to make strategic performance management decisions—adding and deleting products, adjusting process capacities, adjusting prices, removing costs and complexities, and more



**Activity-based management (ABM)** A management approach that focuses on managing activities as a way of eliminating waste and reducing delays and defects.

**activity consumption cost driver** Measures how much of an activity a cost object uses  
**Actual cost.** Cost incurred (a historical or past cost), as distinguished from a budgeted or forecasted cost.

**Activity cost pool** A “bucket” in which costs are accumulated that relate to a single activity measure in an activity-based costing system.

**Activity measure** An allocation base in an activity-based costing system; ideally, a measure of the amount of activity that drives the costs in an activity cost pool.

**Actual costing.** A costing system that traces direct costs to a cost object by using the actual direct-cost rates times the actual quantities of the direct-cost inputs and allocates indirect costs based on the actual indirect-cost rates times the actual quantities of the cost allocation bases.

**actual costing system** A costing process that uses actual costs incurred for direct materials, direct labor, and factory overhead

**actual factory overhead** Costs incurred in an accounting period for indirect materials, indirect labor, and other indirect factory costs, including factory rent, insurance, property tax, depreciation repairs and maintenance, power, light, heat, and employer payroll taxes for factory personnel

**Actual indirect-cost rate.** Actual total indirect costs in a cost pool divided by the actual total quantity of the cost-allocation base for that cost pool.

**additional processing costs or separable costs** Costs that occur after the split-off point and can be identified directly with individual products

**Adjusted allocation-rate approach.** Restates all overhead entries in the general ledger and subsidiary ledgers using actual cost rates rather than budgeted cost rates.

**Administrative costs** All executive, organizational, and clerical costs associated with the general management of an organization rather than with manufacturing or selling.

**allocation bases** The cost drivers used to allocate costs

**Allocation base** A measure of activity such as direct labor-hours or machine-hours that is used to assign costs to cost objects.

**Appraisal costs.** Costs incurred to detect which of the individual units of products do not conform to specifications.

**appraisal (detection) costs** Expenditures devoted to the measurement and analysis of data to determine conformity of outputs to specifications

**average cost** The total of manufacturing cost (materials, labor, and overhead) divided by the number of units of output



**average cost method** A method that uses units of output to allocate joint costs to joint products

**Average cost.** See *unit cost*.

**Avoidable cost** A cost that can be eliminated (in whole or in part) by choosing one alternative over another in a decision. This term is synonymous with *relevant cost* and *differential cost*.

**Backflush costing.** Costing system that omits recording some of the journal entries relating to the stages from purchase of direct material to the sale of finished goods.

**backflush costing** A method that charges current production costs (using standard costs) directly to finished goods inventory without accounting for the flows in and out of work-in-process

**Batch-level costs.** The costs of activities related to a group of units of products or services rather than to each individual unit of product or service.

**batch-level activity** An activity performed for each batch of products or services

**Batch-level activities** Activities that are performed each time a batch of goods is handled or processed, regardless of how many units are in the batch. The amount of resource consumed depends on the number of batches run rather than on the number of units in the batch.

**Benchmarking.** The continuous process of comparing the levels of performance in producing products and services and executing activities against the best levels of performance in competing companies or in companies having similar processes. (244)

**benchmarking** A process by which a firm identifies its critical success factors, studies the best practices of other firms (or other business units within a firm) for achieving these critical success factors, and then implements improvements in the firm's processes to match or beat the performance of those competitors

**Benchmarking** A systematic approach to identifying the activities with the greatest potential for improvement.

**bill of materials** A detailed list of the components of the manufactured product

**Bill of materials** A document that shows the quantity of each type of direct material required to make a product.

**Bottleneck.** An operation where the work to be performed approaches or exceeds the capacity available to do it.

**Bottleneck** A machine or some other part of a process that limits the total output of the entire system.

**Breakeven point (BEP).** Quantity of output sold at which total revenues equal total costs, that is where the operating income is zero.



**Break-even point** The level of sales at which profit is zero.

**breakeven point** The point at which revenues equal total costs and profit is zero

**budgeted capacity utilization** The planned (forecasted) output for the coming period, usually a year

**Budgeted cost.** Predicted or forecasted cost (future cost) as distinguished from an actual or historical cost.

**Budgeted indirect-cost rate.** Budgeted annual indirect costs in a cost pool divided by the budgeted annual quantity of the cost allocation base.

**Business function costs.** The sum of all costs (variable and fixed) in a particular business function of the value chain.

**business analysis** Evaluates the firm's overall performance by using the balanced scorecard, financial ratio analysis and economic value added

**business process improvement** A management method by which managers and workers commit to a program of continuous improvement in quality and other critical success factors

**Byproducts.** Products from a joint production process that have low total sales values compared with the total sales value of the main product or of joint products. (578)

**by-products** Products in a joint production process whose total sales values are minor in comparison with the sales value of the joint products

**Carrying costs.** Costs that arise while holding inventory of goods for sale.

**Chief Financial Officer (CFO)** The member of the top management team who is responsible for providing timely and relevant data to support planning and control activities and for preparing financial statements for external users.

**Committed fixed costs** Investments in facilities, equipment, and basic organizational structure that can't be significantly reduced even for short periods of time without making fundamental changes.

**Common cost.** Cost of operating a facility, activity, or like cost object that is shared by two or more users.

**Common cost** A cost that is incurred to support a number of cost objects but that cannot be traced to them individually. For example, the wage cost of the pilot of a 747 airliner is a common cost of all of the passengers on the aircraft. Without the pilot, there would be no flight and no passengers. But no part of the pilot's wage is caused by any one passenger taking the flight.

**Common fixed cost** A fixed cost that supports more than one business segment, but is not traceable in whole or in part to any one of the business segments.

**Complete reciprocated costs.** The support department's own costs plus any interdepartmental cost allocations. Also called the *artificial costs* of the support department.





**concurrent engineering** An engineering method that integrates product design with manufacturing and marketing throughout the product's life cycle; also called simultaneous engineering

**Conformance quality.** Refers to the performance of a product or service relative to its design and product specifications.

**Constant gross-margin percentage NRV method.** Method that allocates joint costs to joint products in such a way that the overall gross-margin percentage is identical for the individual products.

**continuous improvement** (The Japanese word is *kaizen*.) A management technique in which managers and workers commit to a program of continuous improvement in quality and other critical success factors

**constraints** Those activities that slow the product's total cycle time

**Constraint** Anything that prevents an organization or individual from getting more of what it wants.

**Constraint** A limitation under which a company must operate, such as limited available machine time or raw materials, that restricts the company's ability to satisfy demand.

**Contribution approach** An income statement format that organizes costs by their behavior. Costs are separated into variable and fixed categories rather than being separated according to organizational functions.

**Contribution income statement.** Income statement that groups costs into variable costs and fixed costs to highlight the contribution margin.

**contribution income statement** Focuses on variable costs and fixed costs, in contrast to the conventional income statement, which focuses on product costs and nonproduct costs

**contribution margin income statement** An income statement based on contribution margin that is developed for each profit center and for each relevant group of profit centers

**Contribution margin.** Total revenues minus total variable costs.

**Contribution margin** The amount remaining from sales revenues after all variable expenses have been deducted

**Contribution margin per unit.** Selling price minus the variable cost per unit.

**Contribution margin percentage.** Contribution margin per unit divided by selling price. Also called *contribution margin ratio*.

**contribution margin ratio** The ratio of the unit contribution margin to unit sales price,  $(p - v) / p$

**Contribution margin ratio (CM ratio)** A ratio computed by dividing contribution margin by dollar sales.



**Contribution margin ratio.** See *contribution margin percentage*.

**Controllable cost.** Any cost that is primarily subject to the influence of a given responsibility center manager for a given period.

**controllable cost** A cost that a manager or employee has discretion in choosing to incur or can significantly influence the amount of within a given, usually short, period of time

**controllable fixed costs** Fixed costs that the profit center manager can influence in approximately a year or less

**controllable margin** A margin determined by subtracting short-term controllable fixed costs from the contribution margin

**Controller.** The financial executive primarily responsible for management accounting and financial accounting. Also called *chief accounting officer*.

**Controller** The member of the top management team who is responsible for providing relevant and timely data to managers and for preparing financial statements for external users. The controller reports to the CFO.

**conversion cost** Direct labor and overhead combined into a single amount

**Conversion costs.** All manufacturing costs other than direct material costs.

**Cost.** Resource sacrificed or forgone to achieve a specific objective.

**cost** Incurred when a resource is used for some purpose

**Cost accounting.** Measures, analyzes, and reports financial and nonfinancial information relating to the costs of acquiring or using resources in an organization. It provides information for both management accounting and financial accounting.

**Cost Accounting Standards Board (CASB).** Government agency that has the exclusive authority to make, put into effect, amend, and rescind cost accounting standards and interpretations thereof designed to achieve uniformity and consistency in regard to measurement, assignment, and allocation of costs to government contracts within the United States.

**Cost accumulation.** Collection of cost data in some organized way by means of an accounting system.

**Cost allocation.** Assignment of indirect costs to a particular cost object.

**cost allocation** The process of assigning indirect costs to cost pools and cost objects

**Cost-allocation base.** A factor that links in a systematic way an indirect cost or group of indirect costs to a cost object.

**Cost-application base.** Cost-allocation base when the cost object is a job, product, or customer.





**Cost assignment.** General term that encompasses both (1) tracing accumulated costs that have a direct relationship to a cost object and (2) allocating accumulated costs that have an indirect relationship to a cost object.

**cost assignment** The process of assigning costs to cost pools or from cost pools to cost objects

**Cost behavior** The way in which a cost reacts to changes in the level of activity.

**Cost-benefit approach.** Approach to decision-making and resource allocation based on a comparison of the expected benefits from attaining company goals and the expected costs.

**Cost center.** Responsibility center where the manager is accountable for costs only.

**cost center** A firm's production or support unit that provides the best quality product or service at the lowest cost

**Cost center** A business segment whose manager has control over cost but has no control over revenue or investments in operating assets.

**Cost driver.** A variable, such as the level of activity or volume, that causally affects costs over a given time span.

**Cost driver** A factor, such as machine-hours, beds occupied, computer time, or flight-hours, that causes overhead costs.

**cost driver** Any factor that causes a change in the cost of an activity

**cost driver analysis** The examination, quantification, and explanation of the effects of cost drivers

**cost element** An amount paid for a resource consumed by an activity and included in a cost pool

**cost estimation** The development of a well-defined relationship between a cost object and its cost drivers for the purpose of predicting the cost

**Cost estimation.** The attempt to measure a past relationship based on data from past costs and the related level of an activity.

**Cost function.** Mathematical description of how a cost changes with changes in the level of an activity relating to that cost.

**Cost hierarchy.** Categorization of indirect costs into different cost pools on the basis of the different types of cost drivers, or cost-allocation bases, or different degrees of difficulty in determining cause-and-effect (or benefits received) relationships.

**costing** The process of accumulating, classifying, and assigning direct materials, direct labor, and factory overhead costs to products, services, or projects

**Cost incurrence.** Describes when a resource is consumed (or benefit forgone) to meet a specific objective.



**Cost management.** The approaches and activities of managers to use resources to increase value to customers and to achieve organizational goals.

**cost management** the development and use of cost management information

**cost management information** The information developed and used to implement the organization's strategy. It consists of financial information about costs and revenues, and nonfinancial information about customer retention, productivity, quality, and other key success factors for the organization

**cost leadership** A strategy in which a firm outperforms competitors by producing products or services at the lowest cost

**cost life cycle** The sequence of activities within the firm that begins with research and development, followed by design, manufacturing, marketing/distribution, and customer service

**Cost object.** Anything for which a measurement of costs is desired.

**cost object** Any product, service, customer, activity, or organizational unit to which costs are accumulated for some management purpose

**Cost object** Anything for which cost data are desired. Examples of cost objects are products, customers, jobs, and parts of the organization such as departments or divisions.

**Cost of goods manufactured.** Cost of goods brought to completion, whether they were started before or during the current accounting period.

**cost of goods manufactured** The cost of goods that were finished and transferred out of Work-in-Process Inventory account during a given period

**Cost of goods manufactured** The manufacturing costs associated with the goods that were finished during the period.

**cost of goods sold** The cost of the product transferred to the income statement when inventory is sold

**Cost pool.** A grouping of individual cost items.

**cost pools** The meaningful groups into which costs are collected

**costs of conformance** Prevention and appraisal costs

**costs of nonconformance** Internal failure costs and external failure costs

**Cost predictions.** Forecasts about future costs.

**Cost tracing.** Describes the assignment of direct costs to a particular cost object.

**Cost of capital** The average rate of return a company must pay to its long-term creditors and shareholders for the use of their funds.



**Costs of quality (COQ).** Costs incurred to prevent, or the costs arising as a result of, the production of a low-quality product.

**cost of quality (COQ)** A comprehensive reporting framework for classification of quality-related costs

**cost of quality (COQ) report** A report that shows the costs of prevention, appraisal, internal, and external failures. An important type of cost of quality report is the quality matrix, which shows the different quality costs for each operating and support function

**cost-plus method** A method that determines the transfer price based on the seller's costs plus a gross profit percentage determined by comparing the seller's sales to unrelated parties

**Cost structure** The relative proportion of fixed, variable, and mixed costs in an organization.

**Cost-volume-profit (CVP) analysis.** Examines the behavior of total revenues, total costs, and operating income as changes occur in the units sold, the selling price, the variable cost per unit, or the fixed costs of a product.

**cost-volume-profit (CVP) analysis** A method for analyzing how various operating decisions and marketing decisions will affect net income

**Cost-volume-profit (CVP) graph** A graphical representation of the relationships between an organization's revenues, costs, and profits on the one hand and its sales volume on the other hand.

**Current cost.** Asset measure based on the cost of purchasing an asset today identical to the one currently held, or the cost of purchasing an asset that provides services like the one currently held if an identical asset cannot be purchased.

**Customer-level activities** Activities that are carried out to support customers but that are not related to any specific product.

**cycle time** The amount of time between receipt of a customer order and shipment of the order

**denominator activity level** The output (activity) level used to establish the predetermined fixed overhead application rate; generally defined as *practical capacity*; also called the denominator volume

**denominator volume** The output (activity) level used to calculate the predetermined fixed overhead application rate; generally defined as *practical capacity*; also called the denominator activity level

**departmental overhead rate** An overhead rate calculated for a single production department

**Denominator level.** The denominator in the budgeted fixed overhead rate computation.



**design analysis** A common form of value engineering in which the design team prepares several possible designs of the product, each having similar features with different levels of performance and different costs

**desired rate of return** The minimum rate of return the investing firm requires for an investment

**differential cost** A cost that differs for each decision option and is therefore relevant

**Differential cost** Any cost that differs between alternatives in a decision-making situation. This term is synonymous with *avoidable cost* and *relevant cost*.

**Differential cost.** Difference in total cost between two alternatives.

**Differential cost** A difference in cost between two alternatives. Also see *Incremental cost*.

**Differential cost** Any cost that differs between alternatives in a decision-making situation. This term is synonymous with *avoidable cost* and *relevant cost*.

**Differential revenue.** Difference in total revenue between two alternatives.

**Differential revenue** The difference in revenue between two alternatives

**direct cost** A cost conveniently and economically traced directly to a cost pool or a cost object

**Direct cost** A cost that can be easily and conveniently traced to a specified cost object.

**Direct costing.** See *variable costing*.

**Direct costs of a cost object.** Costs related to the particular cost object that can be traced to that object in an economically feasible (cost-effective) way.

**direct labor cost** The labor used to manufacture the product or to provide the service

**Direct labor** Factory labor costs that can be easily traced to individual units of product. Also called *touch labor*

**direct labor efficiency variance** The difference between the actual hours worked and the standard hours allowed for the units manufactured, multiplied by the standard wage rate

**Direct manufacturing labor costs.** Include the compensation of all manufacturing labor that can be traced to the cost object (work in process and then finished goods) in an economically feasible way.

**Direct material costs.** Acquisition costs of all materials that eventually become part of the cost object (work in process and then finished goods), and that can be traced to the cost object in an economically feasible way.

**direct materials cost** The cost of the materials in the product and a reasonable allowance for scrap and defective units



**Direct materials** Materials that become an integral part of a finished product and whose costs can be conveniently traced to it.

**Direct materials inventory.** Direct materials in stock and awaiting use in the manufacturing process.

**Direct method.** Cost allocation method that allocates each support department's costs to operating departments only.

**direct method** Service department cost allocation accomplished by using the service flows *only to production departments* and determining each production department's share of that service

**Discretionary costs.** Arise from periodic (usually annual) decisions regarding the maximum amount to be incurred and have no measurable cause-and-effect relationship between output and resources used.

**Discretionary fixed costs** Those fixed costs that arise from annual decisions by management to spend on certain fixed cost items, such as advertising and research.

**dual allocation** A cost allocation method that separates fixed and variable costs and traces variable service department costs to the user departments; fixed costs are allocated based on either equal shares among departments or a predetermined budgeted proportion

**Dual-rate method.** Allocation method that classifies costs in each cost pool into two pools (a variable-cost pool and a fixed cost pool) with each pool using a different cost-allocation base.

**Duration driver** A measure of the amount of time required to perform an activity.

**Engineered costs.** Costs that result from a cause-and-effect relationship between the cost driver, output, and the (direct or indirect) resources used to produce that output.

**Engineering approach** A detailed analysis of cost behavior based on an industrial engineer's evaluation of the inputs that are required to carry out a particular activity and of the prices of those inputs.

**Equivalent units.** Derived amount of output units that (a) takes the quantity of each input (factor of production) in units completed and in incomplete units of work in process and (b) converts the quantity of input into the amount of completed output units that could be produced with that quantity of input.

**Equivalent units** The product of the number of partially completed units and their percentage of completion with respect to a particular cost. Equivalent units are the number of complete whole units that could be obtained from the materials and effort contained in partially completed units.

**equivalent units** The number of the same or similar completed units that could have been produced given the amount of work actually performed on both completed and partially completed units



**Equivalent units of production (weighted-average method)** The units transferred to the next department (or to finished goods) during the period plus the equivalent units in the department's ending work in process inventory.

**executional cost drivers** Factors that the firm can manage in the short term to reduce costs such as workforce involvement, design of the production process, and supplier relationships

**External failure costs.** Costs incurred on defective products after they are shipped to customers.

**external failure costs** Costs associated with defective/poor quality outputs detected after being delivered to customers

**Factory overhead costs.** See *indirect manufacturing costs*.

**facility-level activity** An activity performed to support operations of products in general

**factory overhead** All the indirect manufacturing costs commonly combined into a single cost pool in a manufacturing firm

**factory overhead applied** The amount of overhead assigned to a cost object using a predetermined factory overhead rate

**Financial accounting.** Measures and records business transactions and provides financial statements that are based on generally accepted accounting principles. It focuses on reporting to external parties such as investors and banks.

**Financial accounting** The phase of accounting concerned with providing information to stockholders, creditors, and others outside the organization.

**Finished goods inventory.** Goods completed but not yet sold.

**Finished goods** Units of product that have been completed but have not yet been sold to customers.

**finished goods inventory** The cost of goods that are ready for sale

**Finished goods** Units of product that have been completed but not yet sold to customers.

**First-in, first-out (FIFO) process-costing method.** Method of process costing that assigns the cost of the previous accounting period's equivalent units in beginning work-in-process inventory to the first units completed and transferred out of the process, and assigns the cost of equivalent units worked on during the current period first to complete beginning inventory, next to start and complete new units, and finally to units in ending work-in-process inventory.

**FIFO method** A process costing method for calculating the unit cost that includes only costs incurred and work performed during the current period

**FIFO method** A process costing method in which equivalent units and unit costs relate only to work done during the current period.





**First-stage allocation** The process by which overhead costs are assigned to activity cost pools in an activity-based costing system.

**Fixed cost.** Cost that remains unchanged in total for a given time period, despite wide changes in the related level of total activity or volume.

**fixed cost** The portion of the total cost that does not change with a change in the quantity of the cost driver, within the relevant range and a given time period (e.g., one year)

**Fixed cost** A cost that remains constant, in total, regardless of changes in the level of activity within the relevant range. If a fixed cost is expressed on a per unit basis, it varies inversely with the level of activity.

**fixed overhead application rate** A term used for product costing purposes; the rate at which fixed overhead is charged to production per unit of activity (or output)

**Full costs of the product.** The sum of all variable and fixed costs in all business functions of the value chain (R&D, design, production, marketing, distribution, and customer service).

**functional analysis** A common type of value engineering in which the performance and cost of each major function or feature of the product is examined

**goalpost conformance** Conformance to a quality specification expressed as a specified range around a target value

**Gross margin percentage.** Gross margin divided by revenues.

**High-low method.** Method used to estimate a cost function that uses only the highest and lowest observed values of the cost driver within the relevant range and their respective costs.

**high-low method** A method using algebra to determine a *unique* estimation line between representative high and low points in a given data set

**High-low method** A method of separating a mixed cost into its fixed and variable elements by analyzing the change in cost between the high and low activity levels.

**high-value-added activity** Increases the value of the product or service to the customer

**historical cost** The book value of current assets plus the net book value of long-lived assets

**Homogeneous cost pool.** Cost pool in which all the costs have the same or a similar cause-and-effect or benefits-received relationship with the cost-allocation base.

**Hybrid-costing system.** Costing system that blends characteristics from both job-costing systems and process-costing systems.

**Incremental cost.** Additional total cost incurred for an activity.

**Incremental cost** An increase in cost between two alternatives. Also see *Differential cost*.

**Incremental analysis** An analytical approach that focuses only on those costs and revenues that change as a result of a decision.



**Incremental cost-allocation method.** Method that ranks the individual users of a cost object in the order of users most responsible for the common cost and then uses this ranking to allocate cost among those users.

**Incremental revenue.** Additional total revenue from an activity.

**Incremental revenue-allocation method.** Method that ranks individual products in a bundle according to criteria determined by management (for example, sales), and then uses this ranking to allocate bundled revenues to the individual products.

**indirect cost** A cost that is not conveniently or economically traceable to a specific cost pool or cost object

**Indirect cost** A cost that cannot be easily and conveniently traced to a specified cost object.

**Indirect costs of a cost object.** Costs related to the particular cost object that cannot be traced to that object in an economically feasible (cost-effective) way.

**Indirect manufacturing costs.** All manufacturing costs that are related to the cost object (work in process and then finished goods) but that cannot be traced to that cost object in an economically feasible way. Also called *manufacturing overhead costs* and *factory overhead costs*.

**indirect labor cost** Supervision, quality control, inspection, purchasing and receiving, and other labor-related manufacturing support costs

**Indirect labor** The labor costs of janitors, supervisors, materials handlers, and other factory workers that cannot be conveniently traced to particular products.

**indirect materials cost** The cost of materials used in manufacturing that are not easily or economically traceable to the finished product

**Indirect materials** Small items of material such as glue and nails that may be an integral part of a finished product, but whose costs cannot be easily or conveniently traced to it

**Insourcing.** Process of producing goods or providing services within the organization rather than purchasing those same goods or services from outside vendors.

**Inspection point.** Stage of the production process at which products are examined to determine whether they are acceptable or unacceptable units.

**Internal failure costs.** Costs incurred on defective products before they are shipped to customers.

**internal failure costs** Costs associated with defective processes or defective products detected before delivery to customers

**Inventoriable costs.** All costs of a product that are considered as assets in the balance sheet when they are incurred and that become cost of goods sold only when the product is sold.

**Inventoriable costs** Synonym for *product costs*





**Job.** A unit or multiple units of a distinct product or service.

**Job-cost record.** Source document that records and accumulates all the costs assigned to a specific job, starting when work begins. Also called *job-cost sheet*.

**Job-cost sheet.** See *job-cost record*.

**Job cost sheet** A form prepared for a job that records the materials, labor, and manufacturing overhead costs charged to that job.

**job cost sheet** A cost sheet that records and summarizes the costs of direct materials, direct labor, and factory overhead for a particular job

**Job-costing system.** Costing system in which the cost object is a unit or multiple units of a distinct product or service called a job.

**job costing** A product costing system that accumulates and assigns costs to a specific job

**Job-order costing** A costing system used in situations where many different products, jobs, or services are produced each period.

**Joint costs.** Costs of a production process that yields multiple products simultaneously.

**Joint costs** Costs that are incurred up to the split-off point in a process that produces joint \products.

**joint products** Products from the same production process that have relatively substantial sales values

**Joint products.** Two or more products that have high total sales values compared with the total sales values of other products yielded by a joint production process.

**Joint products** Two or more products that are produced from a common input.

**Just-in-time (JIT) production.** Demand-pull manufacturing system in which each component in a production line is produced as soon as, and only when, needed by the next step in the production line. Also called *lean production*.

**just-in-time (JIT) system** A comprehensive production and inventory system that purchases or produces materials and parts only as needed and just in time to be used at each stage of the production process

**Just-in-time (JIT)** A production and inventory control system in which materials are purchased and units are produced only as needed to meet actual customer demand.

**Just-in-time (JIT) purchasing.** The purchase of materials (or goods) so that they are delivered just as needed for production (or sales).

**kanban** A set of control cards used to signal the need for materials and products to move from one operation to the next in an assembly line



**Labor-time sheet.** Source document that contains information about the amount of labor time used for a specific job in a specific department.

**Lean accounting.** Costing method that supports creating value for the customer by costing the entire value stream, not individual products or departments, thereby eliminating waste in the accounting process.

**lean accounting** The accounting technique that uses value streams to measure the financial benefits of a firm's progress in implementing lean manufacturing

**Lean production.** See *just-in-time (JIT) production*.

**life-cycle costing** A method used to identify and monitor the costs of a product throughout its life cycle

**Life-cycle costing.** System that tracks and accumulates business function costs of the value chain attributable to each product from initial R&D to final customer service and support.

**Linear cost behavior** Cost behavior is said to be linear whenever a straight line is a reasonable approximation for the relation between cost and activity

**Linear cost function.** Cost function in which the graph of total costs versus the level of a single activity related to that cost is a straight line within the relevant range.

**Locked-in costs.** Costs that have not yet been incurred but, based on decisions that have already been made, will be incurred in the future. Also called *designed-in costs*.

**low-value-added activity** Consumes time, resources, or space, but adds little to satisfying customer needs

**Main product.** Product from a joint production process that has a high total sales value compared with the total sales values of all other products of the joint production process.

**Make-or-buy decisions.** Decisions about whether a producer of goods or services will insource (produce goods or services within the firm) or outsource (purchase them from outside vendors).

**Make or buy decision** A decision concerning whether an item should be produced internally or purchased from an outside supplier.

**Management accounting.** Measures, analyzes, and reports financial and nonfinancial information that helps managers make decisions to fulfill the goals of an organization. It focuses on internal reporting.

**management accounting** A profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy

**management accounting and control system** An organization's core performance-measurement system



**Management control system.** Means of gathering and using information to aid and coordinate the planning and control decisions throughout an organization and to guide the behavior of its managers and employees.

**management control** The evaluation of mid-level managers by upper-level managers

**Managerial accounting** The phase of accounting concerned with providing information to managers for use within the organization.

**Manufacturing cells.** Grouping of all the different types of equipment used to make a given product.

**Manufacturing cycle efficiency (MCE).** Value-added manufacturing time divided by manufacturing cycle time.

**manufacturing cycle efficiency (MCE)** The ratio of processing time to total cycle time

**Manufacturing cycle time.** See *manufacturing lead time*.

**Manufacturing lead time.** Duration between the time an order is received by manufacturing to the time a finished good is produced. Also called *manufacturing cycle time*.

**Manufacturing overhead allocated.** Amount of manufacturing overhead costs allocated to individual jobs, products, or services based on the budgeted rate multiplied by the actual quantity used of the cost-allocation base. Also called *manufacturing overhead applied*.

**Manufacturing overhead applied.** See *manufacturing overhead allocated*.

**Manufacturing overhead budget** A detailed plan showing the production costs, other than direct materials and direct labor, that will be incurred over a specified time period.

**Manufacturing overhead costs.** See *indirect manufacturing costs*.

**Manufacturing overhead** All manufacturing costs except direct materials and direct labor.

**Manufacturing-sector companies.** Companies that purchase materials and components and convert them into various finished goods.

**Margin** Net operating income divided by sales.

**Margin of safety.** Amount by which budgeted (or actual) revenues exceed breakeven revenues.

**margin of safety** The excess of forecasted sales over breakeven sales

**Margin of safety** The excess of budgeted (or actual) dollar sales over the break-even dollar sales.

**margin of safety ratio** A useful measure for comparing the risk of two or more alternative products



**master (static) budget variance** The difference between actual operating income and the master budget operating income for a period; also called the **operating-income variance**

**Master-budget capacity utilization.** The expected level of capacity utilization for the current budget period (typically one year).

**Materials requirements planning (MRP).** Push-through system that manufactures finished goods for inventory on the basis of demand forecasts.

**materials inventory** Materials used in the manufacturing process or to provide the service

**materials requisition** A department supervisor uses this to request materials for production

**Materials requisition form** A document that specifies the type and quantity of materials to be drawn from the storeroom and that identifies the job that will be charged for the cost of those materials.

**materials usage ratio** The ratio of the quantity used to the quantity purchased

**Materials-requisition record.** Source document that contains information about the cost of direct materials used on a specific job and in a specific department.

**Matrix method.** See *reciprocal method*.

**Merchandising-sector companies.** Companies that purchase and then sell tangible products without changing their basic form.

**mixed cost** A cost that includes both variable and fixed cost components

**Mixed cost.** A cost that has both fixed and variable elements. Also called a *semivariable cost*.

**Mixed cost** A cost that contains both variable and fixed cost elements.

**Multiple predetermined overhead rates** A costing system with multiple overhead cost pools and a different predetermined overhead rate for each cost pool, rather than a single predetermined overhead rate for the entire company. Each production department may be treated as a separate overhead cost pool.

**Net income.** Operating income plus nonoperating revenues (such as interest revenue) minus nonoperating costs (such as interest cost) minus income taxes.

**Net realizable value (NRV) method.** Method that allocates joint costs to joint products on the basis of final sales value minus separable costs of total production of the joint products during the accounting period.

**net realizable value (NRV)** The estimated sales value of the product at the split-off point is determined by subtracting the additional processing and selling costs beyond the split-off point from the ultimate sales value of the product

**Net operating income** Income before interest and income taxes have been deducted



**Nonlinear cost function.** Cost function in which the graph of total costs based on the level of a single activity is not a straight line within the relevant range.

**Nonvalue-added cost.** A cost that, if eliminated, would not reduce the actual or perceived value or utility (usefulness) customers obtain from using the product or service.

**noncontrollable fixed costs** Costs that are not controllable within a year's time, usually including facilities-related costs such as depreciation, taxes, and insurance

**non-value-added activity** An activity that does not contribute to customer value or to the organization's needs

**Non-value-added activities** Activities that consume resources but do not add value for which customers are willing to pay.

**normal capacity** The expected average demand per year over an intermediate term, for example, the upcoming three to five years

**Normal capacity utilization.** The level of capacity utilization that satisfies average customer demand over a period (say, two to three years) that includes seasonal, cyclical, and trend factors.

**Normal costing.** A costing system that traces direct costs to a cost object by using the actual direct-cost rates times the actual quantities of the direct-cost inputs and that allocates indirect costs based on the budgeted indirect-cost rates times the actual quantities of the cost-allocation bases.

**Normal cost system** A costing system in which overhead costs are applied to a job by multiplying a predetermined overhead rate by the actual amount of the allocation base incurred by the job.

**normal costing system** A costing process that uses actual costs for direct materials and direct labor and applies factory overhead to various jobs using a predetermined basis

**Normal spoilage.** Spoilage inherent in a particular production process that arises even under efficient operating conditions.

**normal spoilage** An unacceptable unit that occurs under efficient operating conditions; spoilage that is inherent in the manufacturing process

**Operating assets** Cash, accounts receivable, inventory, plant and equipment, and all other assets held for operating purposes.

**Operating department.** Department that directly adds value to a product or service. Also called a *production department* in manufacturing companies.

**Operating income.** Total revenues from operations minus cost of goods sold and operating costs (excluding interest expense and income taxes).

**operation costing** A hybrid costing system that uses job costing to assign direct materials costs to jobs and process costing to assign conversion costs to products or services



**Operation costing** A hybrid costing system used when products have some common characteristics and some individual characteristics.

**Operation-costing system.** Hybrid-costing system applied to batches of similar, but not identical, products. Each batch of products is often a variation of a single design, and it proceeds through a sequence of operations, but each batch does not necessarily move through the same operations as other batches. Within each operation, all product units use identical amounts of the operation's resources.

**Opportunity cost.** The contribution to operating income that is forgone or rejected by not using a limited resource in its next-best alternative use.

**opportunity cost** The benefit lost when choosing one option precludes receiving the benefits from an alternative option

**Opportunity cost** The potential benefit that is given up when one alternative is selected over another.

**order-filling costs** Expenditures for freight, warehousing, packing and shipping, and collections

**order-getting costs** Expenditures to advertise and promote the product

**Organization-sustaining activities** Activities that are carried out regardless of which customers are served, which products are produced, how many batches are run, or how many units are made.

**Out-of-pocket costs** Actual cash outlays for salaries, advertising, repairs, and similar costs.

**Output unit-level costs.** The costs of activities performed on each individual unit of a product or service.

**Outsourcing.** Process of purchasing goods and services from outside vendors rather than producing the same goods or providing the same services within the organization.

**Overabsorbed indirect costs.** See *overallocated indirect costs*.

**overapplied overhead** The amount of factory overhead applied that exceeds the actual factory overhead cost

**overhead** All the indirect costs commonly combined into a single cost pool

**overhead application or allocation** A process of allocating overhead costs to cost objects

**overtime premium** The excess wage rate over the standard hourly wage rate

**Overallocated indirect costs.** Allocated amount of indirect costs in an accounting period is greater than the actual (incurred) amount in that period. Also called *overapplied indirect costs* and *overabsorbed indirect costs*.

**Overapplied indirect costs.** See *overallocated indirect costs*.





**Overapplied overhead** A credit balance in the Manufacturing Overhead account that occurs when the amount of overhead cost applied to Work in Process exceeds the amount of overhead cost actually incurred during a period. (p. 109)

**Overhead application** The process of charging manufacturing overhead cost to job cost sheets and to the Work in Process account.

**Period costs.** All costs in the income statement other than cost of goods sold.

**period costs** All nonproduct expenditures for managing the firm and selling the product

**Period costs** Costs that are taken directly to the income statement as expenses in the period in which they are incurred or accrued.

**physical measure method** A method that uses a physical measure such as pounds, gallons, yards, or units of volume produced at the split-off point to allocate the joint costs to joint products

**planning and decision making** Budgeting and profit planning, cash flow management, and other decisions related to operations

**plantwide overhead rate** A single overhead rate used throughout the entire production facility

**Plantwide overhead rate** A single predetermined overhead rate that is used throughout a plant.

**Physical-measure method.** Method that allocates joint costs to joint products on the basis of the relative weight, volume, or other physical measure at the splitoff point of total production of these products during the accounting period.

**Practical capacity.** The level of capacity that reduces theoretical capacity by unavoidable operating interruptions such as scheduled maintenance time, shutdowns for holidays, and so on.

**practical capacity** Theoretical capacity reduced by normal output losses due to personal time, normal maintenance, and so on; the measure of capacity used to estimate cost-driver rates under ABC and TDABC systems

**predetermined factory overhead rate** An estimated rate used to apply factory overhead cost to a cost object

**Predetermined overhead rate** A rate used to charge manufacturing overhead cost to jobs that is established in advance for each period. It is computed by dividing the estimated total manufacturing overhead cost for the period by the estimated total amount of the allocation base for the period.

**Prevention costs.** Costs incurred to preclude the production of products that do not conform to specifications.

**prevention costs** Costs incurred to keep quality defects from occurring

**prime costs** The sum of direct materials and direct labor



**principal-agent model** A conceptual model that contains the key elements that contracts must have to achieve the desired objectives

**process costing** A costing system that accumulates product or service costs by process or department and then assigns them to a large number of nearly identical products

**Process costing** A costing system used in situations where a single, homogeneous product (such as cement or flour) is produced for long periods of time

**Previous-department costs.** See *transferred-in costs*.

**Prime costs.** All direct manufacturing costs.

**Prime cost** Direct materials cost plus direct labor cost.

**Process-costing system.** Costing system in which the cost object is masses of identical or similar units of a product or service.

**Process costing** A costing method used when essentially homogeneous products are produced on a continuous basis.

**Processing department** An organizational unit where work is performed on a product and where materials, labor, or overhead costs are added to the product

**Product.** Any output that has a positive total sales value (or an output that enables an organization to avoid incurring costs).

**Product cost.** Sum of the costs assigned to a product for a specific purpose.

**product costs** Under GAAP, the costs necessary to complete the product (direct materials, direct labor, and factory overhead)

**Product costs** All costs that are involved in acquiring or making a product. In the case of manufactured goods, these costs consist of direct materials, direct labor, and manufacturing overhead. Also see *Inventoriable costs*.

**Product-cost cross-subsidization.** Costing outcome where one undercosted (overcosted) product results in at least one other product being overcosted (undercosted).

**Product differentiation.** Organization's ability to offer products or services perceived by its customers to be superior and unique relative to the products or services of its competitors.

**Product overcosting.** A product consumes a low level of resources but is reported to have a high cost per unit.

**Product undercosting.** A product consumes a high level of resources but is reported to have a low cost per unit.

**production cost report** A report that summarizes the physical units and equivalent units of a department, the costs incurred during the period, and the costs assigned to units completed and to units in ending work-in-process inventories





**product-level activity** An activity performed to support the production of a specific product or service

**Product-level activities** Activities that relate to specific products that must be carried out regardless of how many units are produced and sold or batches run.

**Production-denominator level.** The denominator in the budgeted manufacturing fixed overhead rate computation.

**Production department.** See *operating department*.

**Proration.** The spreading of underallocated manufacturing overhead or overallocated manufacturing overhead among ending work in process, finished goods, and cost of goods sold.

**Purchasing costs.** Cost of goods acquired from suppliers including incoming freight or transportation costs.

**Quality.** The total features and characteristics of a product made or a service performed according to specifications to satisfy customers at the time of purchase and during use.

**quality** Defined as customer satisfaction with the total experience of a product or service, that is, the difference between customer expectations and actual performance of the product or service

**Quantitative factors.** Outcomes that are measured in numerical terms.

**Raw materials** Materials that are used to make a product.

**Reciprocal method.** Cost allocation method that fully recognizes the mutual services provided among all support departments. Also called *matrix method*.

**reciprocal method** A cost allocation method that considers all reciprocal flows between service departments through simultaneous equations

**Reengineering.** The fundamental rethinking and redesign of business processes to achieve improvements in critical measures of performance, such as cost, quality, service, speed, and customer satisfaction.

**Refined costing system.** Costing system that reduces the use of broad averages for assigning the cost of resources to cost objects (jobs, products, services) and provides better measurement of the costs of indirect resources used by different cost objects—no matter how differently various cost objects use indirect resources.

**Relevant costs.** Expected future costs that differ among alternative courses of action being considered.

**relevant cost** A cost with two properties: it differs for each decision option and it will be incurred in the future

**Relevant cost** A cost that differs between alternatives in a decision. This term is synonymous with *avoidable cost* and *differential cost*.



**relevant range** The range of the cost driver in which the actual value of the cost driver is expected to fall, and for which the relationship is assumed to be approximately linear

**Relevant range.** Band of normal activity level or volume in which there is a specific relationship between the level of activity or volume and the cost in question.

**Relevant range** The range of activity within which assumptions about variable and fixed cost behavior are valid.

**Relevant range** The range of activity within which assumptions about variable and fixed cost behavior are reasonably valid.

**Relevant revenues.** Expected future revenues that differ among alternative courses of action being considered.

**replacement cost** The current cost to replace the assets at the current level of service and functionality

**Research and development.** Generating and experimenting with ideas related to new products, services, or processes.

**resource** An economic element applied or used to perform activities

**resource-capacity planning** Procedures used to ensure adequate but not excessive supply of capacity-related resources

**resource consumption cost driver** An activity or characteristic that consumes resources

**Revenue center.** Responsibility center where the manager is accountable for revenues only.

**revenue drivers** The factors that affect sales volume, such as price changes, promotions, discounts, customer service, changes in product features, delivery dates, and other value added factors

**Revenue driver.** A variable, such as volume, that causally affects revenues.

**Revenues.** Inflows of assets (usually cash or accounts receivable) received for products or services provided to customers.

**Rework.** Units of production that do not meet the specifications required by customers for finished units that are subsequently repaired and sold as good finished units.

**rework** A produced unit that must be reworked into a good unit that can be sold in regular channels

**salary** A fixed payment

**sales value at split-off method** A method that allocates joint costs to joint products on the basis of their relative sales values at the split-off point



**Sales value at splitoff method.** Method that allocates joint costs to joint products on the basis of the relative total sales value at the splitoff point of the total production of these products during the accounting period.

**Sarbanes-Oxley Act of 2002** Legislation enacted to protect the interests of stockholders who invest in publicly traded companies by improving the reliability and accuracy of the disclosures provided to them.

**Schedule of cost of goods manufactured** A schedule showing the direct materials, direct labor, and manufacturing overhead costs incurred during a period and the portion of those costs that are assigned to Work in Process and Finished Goods.

**Scrap.** Residual material left over when making a product.

**scrap** Residual output that has little or no value

**Second-stage allocation** The process by which activity rates are used to apply costs to products and customers in activity-based costing.

**Segment margin** A segment's contribution margin less its traceable fixed costs. It represents the margin available after a segment has covered all of its own traceable costs.

**Sell or process further decision** A decision as to whether a joint product should be sold at the split-off point or sold after further processing.

**Semivariable cost.** See *mixed cost*.

**Separable costs.** All costs (manufacturing, marketing, distribution, and so on) incurred beyond the splitoff point that are assignable to each of the specific products identified at the splitoff point.

**Sequential allocation method.** See *step-down method*.

**Sequential tracking.** Approach in a product-costing system in which recording of the journal entries occurs in the same order as actual purchases and progress in production.

**Service department.** See *support department*.

**split-off point** The first point in a joint production process at which individual products can be identified

**Split-off point** That point in the manufacturing process where some or all of the joint products can be recognized as individual products.

**Splitoff point.** The juncture in a joint-production process when two or more products become separately identifiable.

**Single-rate method.** Allocation method that allocates costs in each cost pool to cost objects using the same rate per unit of a single allocation base.

**Source document.** An original record that supports journal entries in an accounting system.



**Spoilage.** Units of production that do not meet the specifications required by customers for good units and that are discarded or sold at reduced prices.

**spoilage** An unaccepted unit that is discarded or sold for disposal value

**Stand-alone cost-allocation method.** Method that uses information pertaining to each user of a cost object as a separate entity to determine the cost-allocation weights.

**Stand-alone revenue-allocation method.** Method that uses product-specific information on the products in the bundle as weights for allocating the bundled revenues to the individual products.

**Standard.** A carefully determined price, cost, or quantity that is used as a benchmark for judging performance. It is usually expressed on a per unit basis.

**Standard cost.** A carefully determined cost of a unit of output.

**standard cost** The cost a firm should incur for an operation

**Standard cost card** A detailed listing of the standard amounts of inputs and their costs that are required to produce a unit of a specific product.

**standard cost sheet** A listing of the standard price and quantity of each manufacturing cost element for the production of one unit of a product

**standard cost system** One in which standard, not actual, costs flow through the formal accounting records

**Standard costing.** Costing system that traces direct costs to output produced by multiplying the standard prices or rates by the standard quantities of inputs allowed for actual outputs produced and allocates overhead costs on the basis of the standard overhead-cost rates times the standard quantities of the allocation bases allowed for the actual outputs produced.

**Standard cost per unit** The standard quantity allowed of an input per unit of a specific product, multiplied by the standard price of the input.

**Standard hours per unit** The amount of direct labor time that should be required to complete a single unit of product, including allowances for breaks, machine downtime, cleanup, rejects, and other normal inefficiencies.

**Standard price per unit** The price that should be paid for an input. The price should be net of discounts and should include any shipping costs.

**Standard quantity per unit** The amount of an input that should be required to complete a single unit of product, including allowances for normal waste, spoilage, rejects, and other normal inefficiencies.

**Standard rate per hour** The labor rate that should be incurred per hour of labor time, including employment taxes and fringe benefits.

**Standard input.** A carefully determined quantity of input required for one unit of output.



**Standard price.** A carefully determined price that a company expects to pay for a unit of input.

**Statement of cash flows** A financial statement that highlights the major activities that directly and indirectly impact cash flows and hence affect the overall cash balance.

**Step cost function.** A cost function in which the cost remains the same over various ranges of the level of activity, but the cost increases by discrete amounts (that is, increases in steps) as the level of activity changes from one range to the next.

**step cost** A cost that varies with the cost driver, but in discrete steps; also called semi-fixed cost

**Step-variable cost** The cost of a resource that is obtained in large chunks and that increases and decreases only in response to fairly wide changes in activity.

**step method** A cost allocation method that uses a sequence of steps in allocating service department costs to production departments

**Step-down method.** Cost allocation method that partially recognizes the mutual services provided among all support departments. Also called *sequential allocation method*.

**Stockout costs.** Costs that result when a company runs out of a particular item for which there is customer demand. The company must act to meet that demand or suffer the costs of not meeting it.

**Strategic cost management.** Describes cost management that specifically focuses on strategic issues.

**strategic budget expenditures** Planned spending on projects and initiatives that lead to long-term value and competitive advantage

**strategic control system** The processes and procedures organizations use to monitor progress toward strategic goals of the organization

**strategic cost management** The development of cost management information to facilitate the principal management function, strategic management

**strategic management** The development and implementation of a sustainable competitive position

**structural cost drivers** Strategic plans and decisions that have a long-term effect with regard to issues such as scale, experience, technology, and complexity

**Suboptimal decision making.** Decisions in which the benefit to one subunit is more than offset by the costs or loss of benefits to the organization as a whole. Also called *incongruent decision making* or *dysfunctional decision making*.

**Sunk costs.** Past costs that are unavoidable because they cannot be changed no matter what action is taken.

**sunk costs** Costs that have been incurred in the past or committed for the future, and are therefore irrelevant for decision-making purposes



**Sunk cost** Any cost that has already been incurred and that cannot be changed by any decision made now or in the future.

**Super-variable costing.** See *throughput costing*.

**Supply chain.** Describes the flow of goods, services, and information from the initial sources of materials and services to the delivery of products to consumers, regardless of whether those activities occur in the same organization or in other organizations.

**Supply chain management** A management approach that coordinates business processes across companies to better serve end consumers.

**Support department.** Department that provides the services that assist other internal departments (operating departments and other support departments) in the company. Also called a *service department*.

**Target cost per unit.** Estimated long-run cost per unit of a product or service that enables the company to achieve its target operating income per unit when selling at the target price. Target cost per unit is derived by subtracting the target operating income per unit from the target price.

**target costing** The desired cost for a product as determined on the basis of a given competitive price, so the product will earn a desired profit

**Target costing** The process of determining the maximum allowable cost for a new product and then developing a prototype that can be profitably made for that maximum target cost figure.

**Target operating income per unit.** Operating income that a company aims to earn per unit of a product or service sold.

**Target price.** Estimated price for a product or service that potential customers will pay.

**Target profit analysis** Estimating what sales volume is needed to achieve a specific target profit.

**Theoretical capacity.** The level of capacity based on producing at full efficiency all the time.

**theoretical capacity** A measure of capacity (output or activity) that assumes 100 percent efficiency; maximum possible output (or activity)

**theory of constraints (TOC)** An analysis of operations that improves profitability and cycle time by identifying the bottleneck in the operation and determining the most profitable product mix given the bottleneck

**Theory of constraints (TOC).** Describes methods to maximize operating income when faced with some bottleneck and some non bottleneck operations.

**Theory of Constraints (TOC)** A management approach that emphasizes the importance of managing constraints.





**Throughput costing.** Method of inventory costing in which only variable direct material costs are included as inventoriable costs. Also called *super-variable costing*.

**Throughput margin.** Revenues minus the direct material costs of the goods sold.

**throughput margin** A TOC measure of product profitability; it equals price less materials cost, including all purchased components and materials handling costs

**Throughput time** The amount of time required to turn raw materials into completed products.

**time ticket** A sheet showing the time an employee worked on each job, the pay rate, and the total cost chargeable to each job

**Time ticket** A document that is used to record the amount of time an employee spends on various activities.

**total contribution margin** The unit contribution margin multiplied by the number of units sold

**total manufacturing cost** The sum of materials used, labor, and overhead for the period

**total quality management (TQM)** The unyielding and continuous effort by everyone in the organization to understand, meet, and exceed customer expectations

**Traceable fixed cost** A fixed cost that is incurred because of the existence of a particular business segment and that would be eliminated if the segment were eliminated.

**Transaction driver** A simple count of the number of times an activity occurs.

**transferred-in costs** The costs of work performed in the earlier department that are transferred into the present department

**Transferred-in costs.** Costs incurred in previous departments that are carried forward as the product's costs when it moves to a subsequent process in the production cycle. Also called *previous department costs*.

**two-stage cost allocation** A procedure that assigns a firm's resource costs, namely resource costs, to cost pools and then to cost objects

**Underabsorbed indirect costs.** See *underallocated indirect costs*.

**Underallocated indirect costs.** Allocated amount of indirect costs in an accounting period is less than the actual (incurred) amount in that period. Also called *underapplied indirect costs* or *underabsorbed indirect costs*. (118)

**Underapplied indirect costs.** See *underallocated indirect costs*. (118)

**underapplied overhead** The amount that actual factory overhead exceeds the factory overhead applied



**Underapplied overhead** A debit balance in the Manufacturing Overhead account that occurs when the amount of overhead cost actually incurred exceeds the amount of overhead cost applied to Work in Process during a period.

**Unit cost.** Cost computed by dividing total cost by the number of units. Also called *average cost*.

**unit-based pool** A basis for determining a bonus according to the performance of the manager's unit

**unit contribution margin** The difference between unit sales price and unit variable cost; it is a measure of the change in profit for a unit change in sales

**unit cost** The total manufacturing cost (materials, labor, and overhead) divided by the number of units of output

**unit-level activity** An activity performed for each unit of the cost object

**Unit-level activities** Activities that are performed each time a unit is produced.

**units accounted for** The sum of the units transferred out and ending inventory units

**units to account for** The sum of the beginning inventory units and the number of units started during the period

**Unused capacity.** The amount of productive capacity available over and above the productive capacity employed to meet consumer demand in the current period.

**value activities** Firms in an industry perform activities to design, manufacture, and provide customer service.

**value-added activity** An activity that contributes to customer value and satisfaction or satisfies an organizational need

**Value-added cost.** A cost that, if eliminated, would reduce the actual or perceived value or utility (usefulness) customers obtain from using the product or service.

**value chain** An analytic tool firms use to identify the specific steps required to provide a product or service to the customer

**Value chain** The major business functions that add value to a company's products and services such as research and development, product design, manufacturing, marketing, distribution, and customer service.

**value-chain analysis** A strategic analysis tool used to identify where value to customers can be increased or costs reduced, and to better understand the firm's linkages with suppliers, customers, and other firms in the industry

**Value chain.** The sequence of business functions in which customer usefulness is added to products or services of a company.





**value engineering** Used in target costing to reduce product cost by analyzing the trade-offs between different types of product functionality and total product cost

**Value engineering.** Systematic evaluation of all aspects of the value chain, with the objective of reducing costs and achieving a quality level that satisfies customers.

**Value streams.** All valued-added activities needed to design, manufacture, and deliver a given product or product line to customers.

**Variable cost.** Cost that changes in total in proportion to changes in the related level of total activity or volume.

**Variable expense ratio** A ratio computed by dividing variable expenses by dollar sales

**variable cost** The change in total cost associated with each change in the quantity of the cost driver

**Variable costing.** Method of inventory costing in which only all variable manufacturing costs are included as inventoriable costs. Also called *direct costing*.

**Variable costing** A costing method that includes only variable manufacturing costs—direct materials, direct labor, and variable manufacturing overhead—in unit product costs.

**variable-cost method** In transfer pricing, the transfer price equals the variable cost of the selling unit

**Variance.** The difference between actual result and expected performance.

**variances** The differences between budgeted and actual amounts, for either financial or nonfinancial measures

**weighted-average method** A method for calculating unit cost that includes all costs, both those incurred during the current period and those incurred in the prior period that are shown as the beginning work-in-process inventory of the current period

**work cells** Small groups of related manufacturing processes organized in clusters to assemble parts of finished products

**work-in-process inventory** Contains all costs put into the manufacture of products that are started but not complete at the financial statement date

**Work-in-process inventory.** Goods partially worked on but not yet completed. Also called *work in progress*.

**Work in progress.** See *work-in-process inventory*.

**Work in process** Units of product that are only partially complete and will require further work before they are ready for sale to a customer.

**Weighted-average process-costing method.** Method of process costing that assigns the equivalent-unit cost of the work done to date (regardless of the accounting period in which it



was done) to equivalent units completed and transferred out of the process and to equivalent units in ending work-in-process inventory.

**Weighted-average method** A process costing method that blends together units and costs from both the current and prior periods.

**Work-measurement method.** See *industrial engineering method*.



# Self Assessment Quiz



## 7.5 VALUE-CHAIN ANALYSIS

### Supply Chain Management

**Supply Chain** (usually encompasses more than one firm)

#### Definition

Supply chain describes the flow of goods, services, and information from the initial sources of materials and services to the delivery of products to consumers, *regardless* of whether those activities occur in the same organization or in other organizations.<sup>(H)</sup>

#### Supply Chain Management

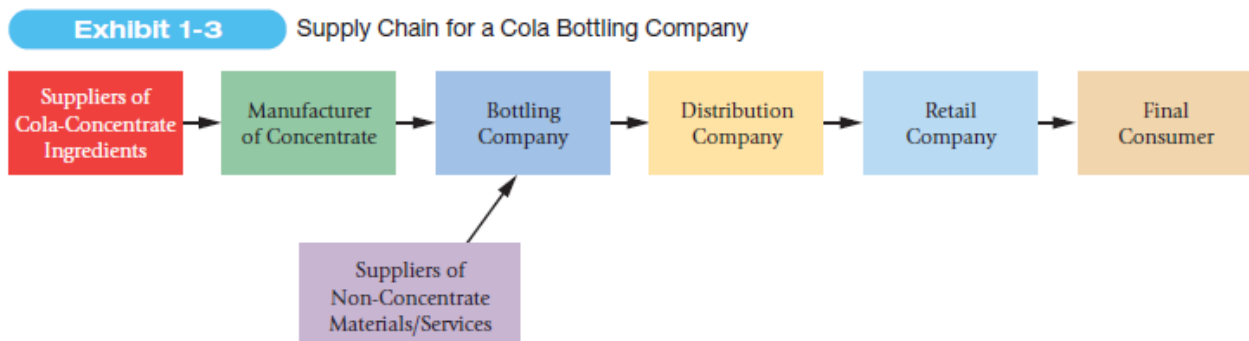
#### Definition

The term supply chain management is commonly used to refer to the coordination of business processes across companies to better serve end consumers.<sup>(G)</sup>

Customers want companies to use the value chain and supply chain to deliver ever improving levels of performance regarding critical success factors:

- Lower Cost with Increased efficiency
- High levels of quality
- Constant innovation.

Supply-chain analysis and coordination should **extend to all parties** in the chain, from initial sources of materials to retailers.



#### Goals of Supply Chain Management

- Maximizing customer value and
- Achieving a sustainable competitive advantage.

#### Supply chain activities

- product development,
- sourcing,
- production,
- logistics, and
- the information systems needed to coordinate these activities.



### Benefits of effective supply chain management

- generally improve performance and reduce costs
- Coordination has special relevance to inventory management: By sharing information among all parties:
  - demand uncertainty is reduced at each level, with consequent decreases of inventory at each level,
  - fewer stockouts at the retail level,
  - avoidance of overproduction and rush orders
    - reduction of excess manufacturing by the manufacturer and thus reduction of excess finished goods inventories, and
    - carry lower inventories, thus reducing the amount of cash tied up in inventories for all.
- fewer rush and expedited orders.

### Issues and problems supply chain management

- communications problems,
- trust issues,
- incompatible information systems, and
- the required increases in personnel resources and financial resources.

## 7. Efficient accounting processes (Gleim p.236)

### Benefits of Improving accounting processes

Increase a company's ability to minimize the costs of these processes while also maximizing their usefulness.

### Areas for improvement

- 1) Accounts payable,
- 2) Cash cycle,
- 3) Closing and reconciliation processes, and
- 4) Data analysis.

### Techniques for creating a future vision for finance function

- **Benchmarking**
  - visits to organizations that are functioning at high levels of efficiency and effectiveness in the processes being considered for redesigning.
  - Then develop standards against which their vision for the finance function can be measured.
- **Current use assessment (customer-centered approach)**
  - identifies the outputs and activities that are depended on by users (Internal customers)
  - gather information for a "wish list" of information the users would like to receive.

## Steps needed to improve accounting processes

### 1.Process walk-throughs (understanding current process)

Is the first step is to gather information about how things are currently being done, this done through:

- conduct a process walk-through, a member of the process redesign team meets with the process owner and each participant in the process in order to gain a thorough understanding of how the work gets done from beginning to end for the purpose of uncovering opportunities for improvement.
- document existing processes
  - listing the sequence of events in the process
  - documenting time required to complete each step, forms used as inputs, reports used as outputs, identification of who performs each step, controls currently in place, where errors typically occur in the process.
  - Every input and output should be challenged through investigating steps to avoid any duplication of effort.
  - Process mapping may be used to provide a visual map of the way information, documents, and work is routed through a process.



### **Benefits of Process walk-throughs**

- Identifying waste and over-capacity
  - duplication of effort,
  - tasks being done that are not necessary
  - output that is not being used
- Identify the root cause of errors
  - same data is being keyed in multiple times, not only is the duplication of effort wasteful, but there is inherent risk that it will be keyed in differently.

**2.Process Design** to cover every aspect of the internal customers' (users') needs.

### **3. Risk-Benefit Evaluation**

- The greater the changes being made, the less the organization can be sure of a successful outcome.
- If the risks are determined to be too great, a return to the process design step may be necessary.

### **4.Planning and Implementing the Redesign**

- The initiative for finance redesign often comes from senior management, so it is a top-down implementation.
- It requires engaging people in the change, if the changes are extensive, they will need to be phased in to allow the employees and the rest of the organization time to adjust to their impact.

### **5.Process Training**

- Done on an individual basis to fully take advantage of the systems being used.

### **Reducing the Accounting Close Cycle**

Significant improvements can be made in the time required to close the general ledger at the end of each month, quarter, and fiscal year. "Soft closes" can be used for month-end closes while reserving the more detailed closing activities and allocations for quarter-end and year-end closes.

- Use of a standardized chart of accounts and general ledger application across all company locations is important for speed in closing.
- Bank reconciliations can be done daily without waiting for the month-end statement by accessing transactions online.
- Depreciation can be calculated a few days before the end of the period.
- Using standard checklist of journal entries that are needed in the closing.
- Mandating standardized accounting procedures.

### **Centralization of Accounting as a Shared Service**

Centralization of all accounting processes (Reorganizing responsibilities along functional lines instead of geographical lines) using a single consolidated accounting system is the best way to resolve closing problems created by accounting decentralization.

### **Benefits of Shared Service**

- specific types of transactions such as accounts payable, accounts receivable, and general ledger can be organized along functional lines,
- utilizing a smaller number of highly-trained people.
- The result is usually fewer errors.
- tasks can be assigned to a smaller number of managers who are in closer proximity, resulting in greater efficiency.
- accounting errors can be researched more easily.



## **Enterprise Resource Planning (ERP) -successor to Manufacturing Resource Planning-**

### **Characteristics of ERP**

- *Integrated* applications that is used to collect, store, manage and interpret data across the organization.
  - ERP systems integrate not only production information but also the sales, marketing, customer service and all accounting functions
- Often the information is available in real-time.
- ERP systems track all of a firm's resources (cash, raw materials, and fixed assets, for example) as well as the status of its commitments (orders, purchase orders, and payroll, for example).
- ran on mainframe computers (high cost for non- cloud-based ERP).
  - cloud-based ERP systems allows smaller and mid-sized businesses to access only what they need and to reduce their investment in hardware and IT personnel.
- enabling supply chain management solutions and support e-commerce applications.

### **Benefits of ERP**

- Reduction in operational costs.
  - Communication is improved across departments, leading to greater efficiencies in production, planning, and decision-making that can lead to lower production costs, lower marketing expenses, and other efficiencies.
- Inventory management facilitated.
  - Inventories can be managed more effectively to keep them at optimal levels.
- Day-to-day operations are facilitated through real-time information.
  - facilitates decision-making and control
- Resource planning as a part of strategic planning is simplified.

## **Learning Outcome Statements**

### **Part 1 – Section D.4. Supply Chain Management**

**The candidate should be able to:**

- a. explain supply chain management
- b. define lean manufacturing and describe its central purpose
- c. identify and describe the operational benefits of implementing lean manufacturing
- f. identify and describe the operational benefits of enterprise resource planning (ERP)

### **Part 1. D.5. Business process improvement**

- n. identify and discuss ways to make accounting operations more efficient, including process walk-throughs, process training, identification of waste and over capacity, identifying the root cause of errors, reducing the accounting close cycle (fast close), and shared services

Last updated 1/Dec/2014

[1] Gleim #: 1.2.17 -- Source: CMA 692 3-5

The terms direct cost and indirect cost are commonly used in accounting. A particular cost might be considered a direct cost of a manufacturing department but an indirect cost of the product produced in the manufacturing department. Classifying a cost as either direct or indirect depends upon

- A. The behavior of the cost in response to volume changes.
  - B. Whether the cost is expensed in the period in which it is incurred.
  - C. The cost object to which the cost is being related.
  - D. Whether an expenditure is unavoidable because it cannot be changed regardless of any action taken.
- Answer (A) is **incorrect**. Behavior in response to volume changes is a factor only if the cost object is a product.
  - Answer (B) is **incorrect**. The timing of an expense is not a means of classifying a cost as direct or indirect.
  - Answer (C) is **correct**. A direct cost can be specifically associated with a single cost object in an economically feasible way. An indirect cost cannot be specifically associated with a single cost object. Thus, the specific cost object influences whether a cost is direct or indirect. For example, a cost might be directly associated with a single plant. The same cost, however, might not be directly associated with a particular department in the plant.
  - Answer (D) is **incorrect**. Both direct and indirect costs can be either avoidable or unavoidable, depending upon the cost object.

[2] Gleim #: 1.2.18 -- Source: CMA 697 3-1

Which one of the following best describes direct labor?

- A. A prime cost.
  - B. A period cost.
  - C. A product cost.
  - D. Both a product cost and a prime cost.
- Answer (A) is **incorrect**. Direct labor is also a product cost.
  - Answer (B) is **incorrect**. A period cost is expensed when incurred. Direct labor cost is inventoriable.
  - Answer (C) is **incorrect**. Direct labor is also a prime cost.



- Answer (D) is **correct**. Direct labor is both a product cost and a prime cost. Product costs are incurred to produce units of output and are deferred to future periods to the extent that output is not sold. Prime costs are defined as direct materials and direct labor.

**[3] Gleim #: 1.2.19 -- Source: CMA 693 3-5**

Inventoriable costs

- A. Include only the prime costs of manufacturing a product.
  - B. Include only the conversion costs of manufacturing a product.
  - C. Are expensed when products become part of finished goods inventory.
  - D. Are regarded as assets before the products are sold.
- Answer (A) is **incorrect**. Overhead costs as well as prime costs (direct materials and labor) are included in inventory.
  - Answer (B) is **incorrect**. Materials costs are also included.
  - Answer (C) is **incorrect**. Inventory costs are expensed when the goods are sold, not when they are transferred to finished goods.
  - Answer (D) is **correct**. Under an absorption costing system, inventoriable (product) costs include all costs necessary for good production. These include direct materials and conversion costs (direct labor and overhead). Both fixed and variable overhead is included in inventory under an absorption costing system. Inventoriable costs are treated as assets until the products are sold because they represent future economic benefits. These costs are expensed at the time of sale.

**[4] Gleim #: 1.2.20 -- Source: CMA 694 3-3**

In cost terminology, conversion costs consist of

- A. Direct and indirect labor.
  - B. Direct labor and direct materials.
  - C. Direct labor and factory overhead.
  - D. Indirect labor and variable factory overhead.
- Answer (A) is **incorrect**. All factory overhead is included in conversion costs, not just indirect labor.
  - Answer (B) is **incorrect**. Direct materials are not an element of conversion costs; they are a prime cost.

- Answer (C) is **correct**. Conversion costs consist of direct labor and factory overhead. These are the costs of converting raw materials into a finished product.
- Answer (D) is **incorrect**. Direct labor is also an element of conversion costs.

**[5] Gleim #: 1.2.21 -- Source: CMA 696 3-18**

Conversion costs do **not** include

- A. Depreciation.
- B. Direct materials.
- C. Indirect labor.
- D. Indirect materials.

- Answer (A) is **incorrect**. Depreciation is a factory overhead cost and therefore is a conversion cost.
- Answer (B) is **correct**. Conversion costs are necessary to convert raw materials into finished products. They include all manufacturing costs, for example, direct labor and factory overhead, other than direct materials.
- Answer (C) is **incorrect**. Indirect labor is a factory overhead cost and therefore is a conversion cost.
- Answer (D) is **incorrect**. Indirect materials are factory overhead costs and therefore are conversion costs.

**[6] Gleim #: 1.2.22 -- Source: CMA 1296 3-3**

Conversion cost pricing

- A. Places minimal emphasis on the cost of materials used in manufacturing a product.
  - B. Could be used when the customer furnishes the material used in manufacturing a product.
  - C. Places heavy emphasis on indirect costs and disregards consideration of direct costs.
  - D. Places heavy emphasis on direct costs and disregards consideration of indirect costs.
- Answer (A) is **incorrect**. Conversion cost pricing does not place any emphasis on raw materials cost.
  - Answer (B) is **correct**. Conversion costs consist of direct labor and factory overhead, the costs of converting raw materials into finished goods. Normally, a company does not consider only conversion costs in making pricing decisions, but if the customer were to furnish the raw materials, conversion cost pricing would be appropriate.

- Answer (C) is **incorrect**. Direct labor is an element of conversion costs.
- Answer (D) is **incorrect**. Factory overhead is an indirect cost that is an element of conversion costs.

**[7] Gleim #: 1.2.23 -- Source: CMA 678 4-7**

The term “prime costs” refers to

- A. Manufacturing costs incurred to produce units of output.
  - B. All costs associated with manufacturing other than direct labor costs and raw material costs.
  - C. The sum of direct labor costs and all factory overhead costs.
  - D. The sum of raw material costs and direct labor costs.
- Answer (A) is **incorrect**. Manufacturing costs incurred to produce output are inventoriable costs.
  - Answer (B) is **incorrect**. All costs associated with manufacturing other than direct labor costs and raw material costs are overhead costs.
  - Answer (C) is **incorrect**. The sum of direct labor and overhead is conversion cost.
  - Answer (D) is **correct**. Prime costs are raw material costs and direct labor costs.

**[8] Gleim #: 1.2.24 -- Source: CMA 1292 3-1**

Costs are allocated to cost objects in many ways and for many reasons. Which one of the following is a purpose of cost allocation?

- A. Evaluating revenue center performance.
  - B. Measuring income and assets for external reporting.
  - C. Budgeting cash and controlling expenditures.
  - D. Aiding in variable costing for internal reporting.
- Answer (A) is **incorrect**. A revenue center is evaluated on the basis of revenue generated, without regard to costs.
  - Answer (B) is **correct**. Cost allocation is the process of assigning and reassigning costs to cost objects. It is used for those costs that cannot be directly associated with a specific cost object. Cost allocation is often used for purposes of measuring income and assets for external reporting purposes. Cost allocation is less meaningful for internal purposes because responsibility accounting systems emphasize controllability, a process often ignored in cost allocation.

- Answer (C) is **incorrect**. Cost allocation is not necessary for cash budgeting and controlling expenditures.
- Answer (D) is **incorrect**. Allocations are not needed for variable costing, which concerns direct, not indirect, costs.

**[9] Gleim #: 1.2.25 -- Source: CMA 1293 3-1**

Cost drivers are

- A. Activities that cause costs to increase as the activity increases.
  - B. Accounting techniques used to control costs.
  - C. Accounting measurements used to evaluate whether or not performance is proceeding according to plan.
  - D. A mechanical basis, such as machine hours, computer time, size of equipment, or square footage of factory, used to assign costs to activities.
- 
- Answer (A) is **correct**. A cost driver is “a measure of activity, such as direct labor hours, machine hours, beds occupied, computer time used, flight hours, miles driven, or contracts, that is a causal factor in the incurrence of cost to an entity” (IMA). It is a basis used to assign costs to cost objects.
  - Answer (B) is **incorrect**. Cost drivers are measures of activities that cause the incurrence of costs.
  - Answer (C) is **incorrect**. Cost drivers are not accounting measurements but measures of activities that cause costs.
  - Answer (D) is **incorrect**. Although cost drivers may be used to assign costs, they are not necessarily mechanical. For example, a cost driver for pension benefits is employee salaries.

**[11] Gleim #: 1.2.27 -- Source: CMA 694 3-1**

Which one of the following is **least** likely to be an objective of a cost accounting system?

- A. Product costing.
  - B. Department efficiency.
  - C. Inventory valuation.
  - D. Sales commission determination.
- 
- Answer (A) is **incorrect**. Product costing is an objective of a cost accounting system.
  - Answer (B) is **incorrect**. Department efficiency is an objective of a cost accounting system.

- Answer (C) is **incorrect**. Inventory valuation is an objective of a cost accounting system.
- Answer (D) is **correct**. A cost accounting system has numerous objectives, including product costing, assessing departmental efficiency, inventory valuation, income determination, and planning, evaluating, and controlling operations. Determining sales commissions is not an objective of a cost accounting system because such commissions are based on sales, not costs.

**[17] Gleim #: 1.2.33 -- Source: CMA 0205 2-12**

A firm calculates that its annual cost to hold excess goods in order to avoid any chance of running out of inventory is \$50,000. This \$50,000 is an example of a

- A. Prime cost.
- B. Quality cost.
- C. Carrying cost.
- D. Stockout cost.

- Answer (A) is **incorrect**. Prime cost is the sum of direct materials and direct labor.
- Answer (B) is **incorrect**. Quality cost is the cost of assuring a product meets standards of quality; quality costs consist of prevention costs, appraisal costs, internal failure costs, and external failure costs.
- Answer (C) is **correct**. The costs of holding or storing inventory are carrying costs. Examples include the costs of capital, insurance, warehousing, breakage, and obsolescence.
- Answer (D) is **incorrect**. Stockout cost is either the lost revenue from a missed sale or the express shipping costs of making a product available on an urgent basis.

**[18] Gleim #: 1.2.34 -- Source: CMA 0205 2-13**

Roberta Johnson is the manager of Sleep-Well Inn, one of a chain of motels located throughout the U.S. An example of an operating cost at Sleep-Well that is both direct and fixed is

- A. Johnson's salary.
- B. Water.
- C. Toilet tissue.
- D. Advertising for the Sleep-Well Inn chain.

- Answer (A) is **correct**. Direct costs are ones that can be associated with a particular cost object in an economically feasible way, that is, they can be traced to that object. Fixed costs are those that remain unchanged in total over the relevant range of production. A motel manager's salary is traceable to the single location she manages, and it remains fixed over a set period of time regardless of the number of guests.
- Answer (B) is **incorrect**. Water is a variable cost.
- Answer (C) is **incorrect**. Toilet tissue is a variable cost.
- Answer (D) is **incorrect**. Advertising for the whole chain is not a direct cost of Roberta Johnson's location.

**[19] Gleim #: 1.2.35 -- Source: CMA 0205 2-16**

Mello Joy produces 200,000 units of a good that has the following costs:

Direct material costs	\$2,000,000
Direct manufacturing labor costs	1,000,000
Indirect manufacturing labor costs	600,000

Mello Joy's per unit prime costs and conversion costs, respectively, are

- A. \$8 and \$15.
  - B. \$8 and \$18.
  - C. \$10 and \$8.
  - D. \$15 and \$8.
- Answer (A) is **incorrect**. Reversing the correct calculations results in \$8 and \$15.
  - Answer (B) is **incorrect**. Reversing the correct calculations and improperly combining all three cost elements for one of the calculations results in \$8 and \$18.
  - Answer (C) is **incorrect**. The amount of \$10 for prime cost results from failing to include direct labor.

- Answer (D) is **correct**. Prime cost consists of direct materials and direct labor. Conversion cost consists of direct labor and manufacturing overhead. The per unit calculations are as follows:

Direct materials	\$2,000,000	Direct labor	\$1,000,000
Direct labor	<u>1,000,000</u>	Manufacturing overhead	<u>600,000</u>
Total prime costs	\$3,000,000	Total conversion costs	\$1,600,000
Divided by: production level	÷ 200,000	Divided by: production level	÷ 200,000
Per unit prime cost	\$ 15	Per unit conversion cost	\$ 8

**[22] Gleim #: 1.2.38 -- Source: CMA 693 3-1**

The allocation of costs to particular cost objects allows a firm to analyze all of the following **except**

- Whether a particular department should be expanded.
  - Why the sales of a particular product have increased.
  - Whether a product line should be discontinued.
  - Why a particular product should be purchased rather than manufactured in-house.
- Answer (A) is **incorrect**. Cost allocation permits a company to determine the profitability of a department and to make decisions relative to expanding or contracting its operations.
  - Answer (B) is **correct**. Cost allocation is an internal matter that does not affect demand (except to the extent it results in a change in price).
  - Answer (C) is **incorrect**. Cost allocation permits a company to determine the profitability of a product line and to decide whether to discontinue that line.
  - Answer (D) is **incorrect**. Make-or-buy decisions depend on cost analyses.

**[26] Gleim #: 1.2.42 -- Source: CMA 685 5-6**

A cost incurred for the benefit of more than one cost objective is

- A variable cost.
- A conversion cost.
- A prime cost.
- A common cost.

- Answer (A) is **incorrect**. A variable cost is one that varies directly with production activity.
- Answer (B) is **incorrect**. Conversion cost is the cost of labor and overhead incurred to convert raw materials into a finished product.
- Answer (C) is **incorrect**. Prime costs are the costs of materials and labor that are directly traceable to a cost objective.
- Answer (D) is **correct**. A cost incurred for the benefit of more than one cost objective is known as a common cost. Allocation of common costs is a persistent problem in responsibility accounting. For example, how should the costs of corporate headquarters be allocated to the segments of a conglomerate? Common cost is also a synonym for joint cost. In this sense, common costs are incurred in the production of two or more inseparable products (e.g., costs of refining petroleum into gasoline, diesel fuel, kerosene, lubricating oils, etc.) up to the point at which the products become separable (the split-off point).

**[27] Gleim #: 1.2.43 -- Source: CMA 685 5-1**

A cost that always can be directly traced to a cost object is

- A. A variable cost.
  - B. An indirect cost.
  - C. A conversion cost.
  - D. A prime cost.
- Answer (A) is **incorrect**. Some overhead costs are variable but cannot be directly traced to a particular product.
  - Answer (B) is **incorrect**. It includes costs that cannot be directly traced.
  - Answer (C) is **incorrect**. It includes costs that cannot be directly traced.
  - Answer (D) is **correct**. Prime costs are direct materials and direct labor. They are directly identifiable elements of production costs and are directly traceable to the product.



**[28] Gleim #: 1.2.44 -- Source: CMA 678 4-6**

Conversion costs are

- A. Manufacturing costs incurred to produce units of output.
- B. All costs associated with manufacturing other than direct labor costs and raw material costs.
- C. The sum of direct labor costs and all factory overhead costs.
- D. The sum of raw materials costs and direct labor costs.

- Answer (A) is **incorrect**. Manufacturing costs incurred to produce units of output are inventoriable (product) costs.
- Answer (B) is **incorrect**. All costs associated with manufacturing other than direct labor costs and raw materials costs are overhead costs. Conversion costs consist of both direct labor and overhead.
- Answer (C) is **correct**. Conversion costs are the direct labor, indirect materials, and factory overhead incurred to convert raw materials and transferred-in goods in a cost center to finished goods.
- Answer (D) is **incorrect**. Raw materials costs and direct labor costs are prime costs.

**[32] Gleim #: 1.2.48 -- Source: CMA 0408 2-079**

In practice, items such as wood screws and glue used in the production of school desks and chairs would most likely be classified as

- A. Direct labor.
- B. Factory overhead.
- C. Direct materials.
- D. Period costs.

- Answer (A) is **incorrect**. Direct labor is the cost of human labor that can practicably be traced to the product.
- Answer (B) is **correct**. Those tangible inputs to the manufacturing process that cannot practicably be traced to the product, such as wood screws and glue used in the production of school desks and chairs, are referred to as indirect costs. Indirect costs are one of the three components of manufacturing overhead, the other two being indirect labor and factory operating costs.
- Answer (C) is **incorrect**. Direct materials are those tangible inputs to the manufacturing process that can practicably be traced to the product.

- Answer (D) is **incorrect**. Period costs are those costs that are expensed as incurred rather than capitalized as part of the cost of inventory.

**[33] Gleim #: 1.2.49 -- Source: CMA 0408 2-081**

A review of Plunkett Corporation's accounting records for last year disclosed the following selected information:

Variable costs:

Direct materials used	\$ 56,000
Direct labor	179,100
Manufacturing overhead	154,000
Selling costs	108,400

Fixed costs:

Manufacturing overhead	267,000
Selling costs	121,000
Administrative costs	235,900

In addition, the company suffered a \$27,700 uninsured factory fire loss during the year. What were Plunkett's product costs and period costs for last year?

	<u>Product</u>	<u>Period</u>
A.	\$235,100	\$914,000
B.	\$497,500	\$651,600
C.	\$656,100	\$493,000
D.	\$683,800	\$465,300

- Answer (A) is **incorrect**. The amounts of \$235,100 and \$914,000 result from treating overhead as a period, rather than a product, cost.
- Answer (B) is **incorrect**. The amounts of \$497,500 and \$651,600 are the totals, respectively, of the variable and fixed, not the product and period, costs.

- Answer (C) is **correct**. Product costs, also called inventoriable costs, are capitalized as part of finished goods inventory. They eventually become a component of cost of goods sold. Period costs are expensed as incurred, i.e., they are not capitalized in finished goods inventory and are thus excluded from cost of goods sold. Plunkett's product and period costs can be calculated as follows:

	Product Costs	Period Costs
Direct materials	\$ 56,000	
Direct labor	179,100	
Variable overhead	154,000	
Fixed overhead	267,000	
Variable selling costs		\$108,400
Fixed selling costs		121,000
Administrative costs		235,900
Uninsured loss		27,700
Totals	<u>\$656,100</u>	<u>\$493,000</u>

- Answer (D) is **incorrect**. This combination of costs results from improperly classifying the uninsured loss as a product cost.

**[34] Gleim #: 1.2.50 -- Source: CMA 0408 2-083**

Which one of the following items would **not** be considered a manufacturing cost?

- Cream for an ice cream maker.
- Sales commissions for a car manufacturer.
- Plant property taxes for an ice cream maker.
- Tires for an automobile manufacturer.

- Answer (A) is **incorrect**. Cream is a direct material for an ice cream maker.
- Answer (B) is **correct**. Manufacturing costs consist of direct materials, direct labor, and manufacturing overhead. The cream, plant property taxes, and tires are all integral to the production of the final product and so are properly classified as manufacturing costs. Sales commissions, however, are not incurred until after the product has been manufactured. They are properly classified as a selling expense.
- Answer (C) is **incorrect**. The taxes on a manufacturing facility are a cost of producing the product.

- Answer (D) is **incorrect**. Tires are part of the final product of an automobile manufacturer, resulting in them being properly classified as direct materials and thus manufacturing costs.

**[35] Gleim #: 1.2.51 -- Source: CMA 0408 2-084**

Finley Painters Co., a painting contractor, maintains a job-order cost system. Job costs are accumulated by tracking the actual cost of paint and other materials used on each job, as well as the actual cost of wages earned by the painters on each job. In addition, overhead is applied to each job by using a predetermined rate based on the actual painters' wages. Leonard Wayne, painter, earned \$168 today by working on Job 08-45. In computing prime cost and conversion cost for Job 08-45, how would the wages earned today by Wayne be classified?

- A. As a component of both prime and conversion cost.
  - B. As a component of prime cost but not as a component of conversion cost.
  - C. As a component of conversion cost but not as a component of prime cost.
  - D. As a component of neither prime cost nor conversion cost.
- Answer (A) is **correct**. Manufacturing costs are often grouped into the following classifications: prime cost, which equals direct materials plus direct labor (i.e., those costs directly attributable to a product), and conversion cost, which equals direct labor plus manufacturing overhead (i.e., the costs of converting raw materials into the finished product). The wages earned by a painter working for a painting contractor are thus properly classified as both a prime cost and a conversion cost.
  - Answer (B) is **incorrect**. The wages earned by a painter working for a painting contractor are properly classified as both a prime cost and a conversion cost.
  - Answer (C) is **incorrect**. The wages earned by a painter working for a painting contractor are properly classified as both a prime cost and a conversion cost.
  - Answer (D) is **incorrect**. The wages earned by a painter working for a painting contractor are properly classified as both a prime cost and a conversion cost.

**[36] Gleim #: 1.2.52 -- Source: CMA 0408 2-089**

Indirect and common costs often make up a significant portion of the cost of a product. All of the following are reasons for indirect cost allocation to cost objects **except** to

- A. Reduce total costs identified with products.
- B. Measure income and assets for external reporting purposes.
- C. Justify costs for reimbursement purposes.
- D. Provide information for economic decision making.

- Answer (A) is **correct**. The total costs identified with products are unaffected by the treatment of indirect and common costs. The ability to identify a cost with a product is determined by traceability.
- Answer (B) is **incorrect**. Product costing for external financial reporting purposes are dictated by GAAP.
- Answer (C) is **incorrect**. Reimbursement policies are established contractually.
- Answer (D) is **incorrect**. Sound indirect cost allocation methods can improve the conditions for decision making.

[3] Gleim #: 1.3.56 -- Source: CMA 694 3-5

Which one of the following categories of cost is most likely **not** considered a component of fixed factory overhead?

- A. Rent.
- B. Property taxes.
- C. Depreciation.
- D. Power.

- Answer (A) is **incorrect**. Rent is an example of fixed factory overhead.
- Answer (B) is **incorrect**. Property taxes are an example of fixed factory overhead.
- Answer (C) is **incorrect**. Depreciation is an example of fixed factory overhead.
- Answer (D) is **correct**. A fixed cost is one that remains unchanged within the relevant range for a given period despite fluctuations in activity. Such items as rent, property taxes, depreciation, and supervisory salaries are normally fixed costs because they do not vary with changes in production. Power costs, however, are at least partially variable because they increase as usage increases.

[4] Gleim #: 1.3.57 -- Source: CMA 692 3-1

The controller of JoyCo has requested a quick estimate of the manufacturing supplies needed for the Morton Plant for the month of July when production is expected to be 470,000 units to meet the ending inventory requirements and sales of 475,000 units. JoyCo's budget analyst has the following actual data for the last 3 months:

<u>Month</u>	<u>Production in Units</u>	<u>Manufacturing Supplies</u>
March	450,000	\$723,060
April	540,000	853,560
May	480,000	766,560

Using these data and the high-low method to develop a cost estimating equation, the estimate of needed manufacturing supplies for July would be

- A. \$652,500
- B. \$681,500
- C. \$749,180
- D. \$752,060

- Answer (A) is **incorrect**. The total variable costs for March equal \$652,500.
- Answer (B) is **incorrect**. The variable portion of the total costs is \$681,500.
- Answer (C) is **incorrect**. The amount of \$749,180 is a nonsense answer.
- Answer (D) is **correct**. The fixed and variable portions of mixed costs may be estimated by identifying the highest and the lowest costs within the relevant range. The difference in cost divided by the difference in activity is the variable rate. Once the variable rate is found, the fixed portion is determinable. April and March provide the highest and lowest amounts. The difference in production was 90,000 units (540,000 April – 450,000 March), and the difference in the cost of supplies was \$130,500 (\$853,560 – \$723,060). Hence, the unit variable cost was \$1.45 ( $\$130,500 \div 90,000$  units). The total variable costs for March must have been \$652,500 (450,000 units  $\times$  \$1.45 VC per unit), and the fixed cost must therefore have been \$70,560 ( $\$723,060 - \$652,500$ ). The probable costs for July equal \$681,500 (470,000 units  $\times$  \$1.45 VC per unit), plus \$70,560 of fixed costs, a total of \$752,060.

**[7] Gleim #: 1.3.60 -- Source: CMA 1292 3-11**

Butteco has the following cost components for 100,000 units of product for the year:

Direct materials	\$200,000
Direct labor	100,000
Manufacturing overhead	200,000
Selling and administrative expense	150,000

All costs are variable except for \$100,000 of manufacturing overhead and \$100,000 of selling and administrative expenses. The total costs to produce and sell 110,000 units for the year are

- A. \$650,000
- B. \$715,000
- C. \$695,000
- D. \$540,000

- Answer (A) is **incorrect**. The cost at a production level of 100,000 units is \$650,000.
- Answer (B) is **incorrect**. The amount of \$715,000 assumes a variable unit cost of \$6.50 with no fixed costs.

- Answer (C) is **correct**. Direct materials unit costs are strictly variable at \$2 ( $\$200,000 \div 100,000$  units). Similarly, direct labor has a variable unit cost of \$1 ( $\$100,000 \div 100,000$  units). The \$200,000 of manufacturing overhead for 100,000 units is 50%. The variable unit cost is \$1. Selling costs are \$100,000 fixed and \$50,000 variable for production of 100,000 units, and the variable unit selling expenses is \$.50 ( $\$50,000 \div 100,000$  units). The total unit variable cost is therefore \$4.50 ( $\$2 + \$1 + \$1 + \$.50$ ). Fixed costs are \$200,000. At a production level of 110,000 units, variable costs are \$495,000 ( $110,000 \text{ units} \times \$4.50$ ). Hence, total costs are \$695,000 ( $\$495,000 + \$200,000$ ).
- Answer (D) is **incorrect**. Total costs are \$695,000 based on a unit variable cost of \$4.50 each.

**[8] Gleim #: 1.3.61 -- Source: CMA 694 3-9**

The difference between variable costs and fixed costs is

- A. Variable costs per unit fluctuate and fixed costs per unit remain constant.
  - B. Variable costs per unit are fixed over the relevant range and fixed costs per unit are variable.
  - C. Total variable costs are variable over the relevant range and fixed in the long term, while fixed costs never change.
  - D. Variable costs per unit change in varying increments, while fixed costs per unit change in equal increments.
- Answer (A) is **incorrect**. Variable costs are fixed per unit; they do not fluctuate. Fixed costs per unit change as production changes.
  - Answer (B) is **correct**. Fixed costs remain unchanged within the relevant range for a given period despite fluctuations in activity, but per unit fixed costs do change as the level of activity changes. Thus, fixed costs are fixed in total but vary per unit as activity changes. Total variable costs vary directly with activity. They are fixed per unit, but vary in total.
  - Answer (C) is **incorrect**. All costs are variable in the long term.
  - Answer (D) is **incorrect**. Unit variable costs are fixed in the short term.



**[9] Gleim #: 1.3.62 -- Source: CMA 1282 4-101**

Which of the following is the best example of a variable cost?

- A. The corporate president's salary.
- B. Cost of raw material.
- C. Interest charges.
- D. Property taxes.

- Answer (A) is **incorrect**. The president's salary usually does not vary with production levels.
- Answer (B) is **correct**. Variable costs vary directly with the level of production. As production increases or decreases, material cost increases or decreases, usually in a direct relationship.
- Answer (C) is **incorrect**. Interest charges are independent of production levels. They are called "fixed" costs and are elements of overhead.
- Answer (D) is **incorrect**. Property taxes are independent of production levels. They are called "fixed" costs and are elements of overhead.

**[15] Gleim #: 1.3.68 -- Source: CMA 0205 2-17**

Parker Company pays each member of its sales staff a salary as well as a commission on each unit sold. For the coming year, Parker plans to increase all salaries by 5% and to keep unchanged the commission paid on each unit sold. Because of increased demand, Parker expects the volume of sales to increase by 10%. How will the total cost of sales salaries and commissions change for the coming year?

- A. Increase by 5% or less.
- B. Increase by more than 5% but less than 10%.
- C. Increase by 10%.
- D. Increase by more than 10%.

- Answer (A) is **incorrect**. The salaries alone will increase by 5%.
- Answer (B) is **correct**. Sales salaries will increase by exactly 5%. The per-unit commission amount will remain constant, but sales commissions in total are expected to increase by 10%. Thus, total sales salaries and commissions will increase somewhere between 5% and 10%.
- Answer (C) is **incorrect**. Since the sales salaries are increasing by only 5%, the combination of salaries and commissions cannot be greater than 20%.

- Answer (D) is **incorrect**. The combination of the 5% increase in salaries and the 10% increase in commissions cannot exceed 10%.

**[16] Gleim #: 1.3.69 -- Source: CMA 0205 2-23**

Ace, Inc., estimates its total materials handling costs at two production levels as follows:

<u>Cost</u>	<u>Gallons</u>
\$160,000	80,000
\$132,000	60,000

What is the estimated total cost for handling 75,000 gallons?

- A. \$146,000
- B. \$150,000
- C. \$153,000
- D. \$165,000

- Answer (A) is **incorrect**. The amount of \$146,000 results from incorrectly assuming that, because 75,000 is halfway between the high and low levels of production given, the cost will be halfway between \$160,000 and \$132,000.
- Answer (B) is **incorrect**. The variable portion when improperly calculating only at the highest level of production is \$150,000.
- Answer (C) is **correct**. The high-low method can be applied to calculate the two portions of a mixed cost. The numerator is the difference between the cost at the highest level of activity and the cost at the lowest level ( $\$160,000 - \$132,000 = \$28,000$ ). The denominator is the difference between the highest level of activity from the lowest level ( $80,000 - 60,000 = 20,000$ ). The variable portion of the total mixed cost is derived by dividing these two figures ( $\$28,000 \div 20,000 = \$1.40$  per gallon). The fixed portion can be calculated by inserting the appropriate values for either the high or low level as follows:

$$\begin{aligned}\text{Fixed portion} &= \text{Total cost} - \text{Variable portion} \\ &= \$160,000 - (80,000 \times \$1.40) \\ &= \$160,000 - \$112,000 \\ &= \$48,000\end{aligned}$$

The total handling cost for a production level of 75,000 can now be determined:  $\$48,000 + (75,000 \times \$1.40) = \$153,000$ .

- Answer (D) is **incorrect**. The variable portion when improperly calculating only at the lowest level of production is \$165,000.

[18] Gleim #: 1.3.71 -- Source: CMA 693 3-4

A fixed cost that would be considered a direct cost is

- A. A cost accountant's salary when the cost objective is a unit of product.
  - B. The rental cost of a warehouse to store inventory when the cost objective is the Purchasing Department.
  - C. A production supervisor's salary when the cost objective is the Production Department.
  - D. Board of directors' fees when the cost objective is the Marketing Department.
- Answer (A) is **incorrect**. A cost accountant's salary cannot be directly associated with a single product. Cost accountants work with many different products during a pay period.
  - Answer (B) is **incorrect**. Warehouse rent is not directly traceable to the Purchasing Department. Other departments have influence over the level of inventories stored.
  - Answer (C) is **correct**. A direct cost is one that can be specifically associated with a single cost objective in an economically feasible way. Thus, a production supervisor's salary can be directly associated with the department (s)he supervises.
  - Answer (D) is **incorrect**. Directors' fees cannot be directly associated with the Marketing Department. Directors provide benefits to all departments within a corporation.

[19] Gleim #: 1.3.72 -- Source: CMA 697 3-2

Which one of the following is correct regarding a relevant range?

- A. Total variable costs will not change.
  - B. Total fixed costs will not change.
  - C. Actual fixed costs usually fall outside the relevant range.
  - D. The relevant range cannot be changed after being established.
- Answer (A) is **incorrect**. Variable costs will change in total, but unit variable costs will be constant.
  - Answer (B) is **correct**. The relevant range is the range of activity over which unit variable costs and total fixed costs are constant. The incremental cost of one additional unit of production will be equal to the variable cost.
  - Answer (C) is **incorrect**. Actual fixed costs should not vary greatly from budgeted fixed costs for the relevant range.

- Answer (D) is **incorrect**. The relevant range can change whenever production activity changes; the relevant range is merely an assumption used for budgeting and control purposes.

**[20] Gleim #: 1.3.73 -- Source: CMA 0408 2-085**

Taylor Company is determining the cost behavior of several items in order to budget for the upcoming year. Past trends have indicated the following dollars were spent at three different levels of output:

	Unit Levels		
	10,000	12,000	15,000
Cost A	\$25,000	\$29,000	\$35,000
Cost B	10,000	15,000	15,000
Cost C	15,000	18,000	22,500

In establishing a budget for 14,000 units, Taylor should treat Costs A, B, and C, respectively, as

- Semivariable, fixed, and variable.
- Variable, fixed, and variable.
- Semivariable, semivariable, and semivariable.
- Variable, semivariable, and semivariable.

- Answer (A) is **correct**. To properly understand the nature of a cost, its behavior in total and on a per-unit basis can be examined. Dividing the total costs incurred by the activity levels yields the following per-unit results:

	10,000	12,000	15,000
Cost A	\$2.50	\$2.42	\$2.33
Cost B	1.00	1.25	1.00
Cost C	1.50	1.50	1.50

Cost A increases disproportionately across the relevant range in total and decreases proportionately on a per-unit basis; A is thus a semivariable cost. Cost C increases steadily across the relevant range in total but remains constant on a per-unit basis; C is thus a variable cost.

- Answer (B) is **incorrect**. Cost A is semivariable.
- Answer (C) is **incorrect**. Cost C is variable.
- Answer (D) is **incorrect**. Cost A is semivariable and Cost C is variable.

**[21] Gleim #: 1.3.74 -- Source: CMA 0408 2-086**

Which one of the following refers to a cost that remains the same as the volume of activity decreases within the relevant range?

- A. Average cost per unit.
- B. Variable cost per unit.
- C. Unit fixed cost.
- D. Total variable cost.

- Answer (A) is **incorrect**. Average total cost per unit declines steadily as production volume increases over the relevant range.
- Answer (B) is **correct**. Variable cost per unit remains constant in the short run regardless of the level of production. This is in contrast with variable costs in total, which vary directly and proportionally with changes in volume.
- Answer (C) is **incorrect**. Fixed cost per unit varies indirectly with the activity level.
- Answer (D) is **incorrect**. Variable costs in total vary directly and proportionally with changes in volume.

**[22] Gleim #: 1.3.75 -- Source: CMA 0408 2-087**

Fowler Co. provides the following summary of its total budgeted production costs at three production levels:

	Volume in Units		
	1,000	1,500	2,000
Cost A	\$1,420	\$2,130	\$2,840
Cost B	1,550	2,200	2,900
Cost C	1,000	1,000	1,000
Cost D	1,630	2,445	3,260

The cost behavior of each of the Costs A through D, respectively, is

- A. Semivariable, variable, fixed, and variable.
- B. Variable, semivariable, fixed, and semivariable.
- C. Variable, fixed, fixed, and variable.
- D. Variable, semivariable, fixed, and variable.

- Answer (A) is **incorrect**. Cost A is variable.
- Answer (B) is **incorrect**. Cost D is variable.
- Answer (C) is **incorrect**. Cost B is semivariable.
- Answer (D) is **correct**. To properly understand the nature of a cost, its behavior in total and on a per-unit basis can be examined. Dividing the total costs incurred by the activity levels yields the following per-unit results:

	<u>1,000</u>	<u>1,500</u>	<u>2,000</u>
Cost A	\$1.42	\$1.42	\$1.42
Cost B	1.55	1.47	1.45
Cost C	1.00	0.67	0.50
Cost D	1.63	1.63	1.63

Costs A and D increase steadily across the relevant range in total but remain constant on a per-unit basis; they are thus variable costs. Cost B increases disproportionately across the relevant range in total and decreases disproportionately on a per-unit basis; B is thus a semivariable cost.

**[23] Gleim #: 1.3.76 -- Source: CMA 0408 2-090**

The relevant range refers to the activity levels over which

- Cost relationships hold constant.
  - Costs fluctuate.
  - Production varies.
  - Relevant costs are incurred.
- Answer (A) is **correct**. The relevant range defines the limits within which per-unit variable costs remain constant and fixed costs are not changeable. It is synonymous with the short run. The relevant range is established by the efficiency of a company's current manufacturing plant, its agreements with labor unions and suppliers, etc.
  - Answer (B) is **incorrect**. The relevant range refers to the activity levels over which cost relationships hold constant.
  - Answer (C) is **incorrect**. Production varies over both the relevant range (the short run) and the long run.
  - Answer (D) is **incorrect**. Relevant costs are those pertaining to a particular decision.

**[24] Gleim #: 1.3.77 -- Source: CMA 0408 2-091**

Cell Company has discovered that the cost of processing customer invoices is strictly variable within the relevant range. Which one of the following statements concerning the cost of processing customer invoices is **incorrect**?

- A. The total cost of processing customer invoices will increase as the volume of customer invoices increases.
  - B. The cost per unit for processing customer invoices will decline as the volume of customer invoices increases.
  - C. The cost of processing the 100th customer invoice will be the same as the cost of processing the first customer invoice.
  - D. The average cost per unit for processing a customer invoice will equal the incremental cost of processing one more customer invoice.
- Answer (A) is **incorrect**. Since the cost in question is strictly variable within the relevant range, the total cost will increase as the volume increases.
  - Answer (B) is **correct**. Variable cost per unit remains constant in the short run regardless of the level of production.
  - Answer (C) is **incorrect**. Since the cost in question is strictly variable within the relevant range, the unit cost remains the same.
  - Answer (D) is **incorrect**. Since the cost in question is strictly variable within the relevant range, the average cost per unit is the same as the incremental cost.

**[25] Gleim #: 1.3.78 -- Source: CMA 0408 2-092**

When identifying fixed and variable costs, which one of the following is a typical assumption concerning cost behavior?

- A. General and administrative costs are assumed to be variable costs.
  - B. Cost behavior is assumed to be realistic for all levels of activity from zero to maximum capacity.
  - C. Total costs are assumed to be linear when plotted on a graph.
  - D. The relevant time period is assumed to be 5 years.
- Answer (A) is **incorrect**. General and administrative costs are not assumed to be variable.
  - Answer (B) is **incorrect**. Maximum capacity varies depending on the current productive facilities.

- Answer (C) is **correct**. Total costs, being a mixture of fixed and variable costs, are assumed to be linear.
- Answer (D) is **incorrect**. The relevant time period varies for each organization.

**[26] Gleim #: 1.3.79 -- Source: CMA 0408 2-093**

A management accountant is about to prepare graphs of total variable cost and per-unit variable cost for use in a short-term planning model. Dollars will be depicted on the vertical axis; activity will be shown on the horizontal axis. How will these graphs appear under completion?

	<u>Total Variable Cost</u>	<u>Per-Unit Variable Cost</u>
A.	Straight line, sloping upward to the right.	Straight line, parallel to the horizontal axis.
B.	Curvilinear, sloping upward to the right.	A line that basically parallels the horizontal axis, first decreasing and then increasing.
C.	Straight line, sloping upward to the right.	Straight line, sloping upward to the right.
D.	Straight line, parallel to the horizontal axis.	Straight line, sloping upward to the right.

- Answer (A) is **correct**. Variable costs in total vary directly and proportionally with changes in volume. This is depicted as a straight line sloping upward to the right. Variable cost per unit, however, remains constant in the short run regardless of the level of production. This is depicted as a horizontal line.
- Answer (B) is **incorrect**. Total variable cost is depicted as a straight line.
- Answer (C) is **incorrect**. Per-unit variable cost is depicted as a horizontal line.
- Answer (D) is **incorrect**. Per-unit variable cost is depicted as a horizontal line.



**[27] Gleim #: 1.3.80 -- Source: CMA 0408 2-095**

Lar Company has found that its total electricity cost has both a fixed component and a variable component within the relevant range. The variable component seems to vary directly with the number of units produced. Which one of the following statements concerning Lar's electricity cost is **incorrect**?

- A. The total electricity cost will increase as production volume increases.
- B. The total electricity cost per unit of production will increase as production volume increases.
- C. The variable electricity cost per unit of production will remain constant as production volume increases.
- D. The fixed electricity cost per unit of production will decline as production volume increases.

- Answer (A) is **incorrect**. The total electricity cost will increase as production volume increases.
- Answer (B) is **correct**. Because of the fixed portion, the per-unit cost of a mixed, or semivariable, cost will decrease as production volume increases.
- Answer (C) is **incorrect**. The variable portion of total cost will remain constant on a per-unit basis as production volume increases.
- Answer (D) is **incorrect**. The fixed portion of total cost will decrease on a per-unit basis as production volume increases.

**[36] Gleim #: 1.3.89 -- Source: CMA 0408 2-050**

Over the past several years, McFadden Industries has experienced the following regarding the company's shipping expenses:

Fixed costs	\$16,000
Average shipment	15 pounds
Cost per pound	\$.50

Shown below are McFadden's budget data for the coming year.

Number of units shipped	8,000
Number of sales orders	800
Number of shipments	800
Total sales	\$1,200,000
Total pounds shipped	9,600

McFadden's expected shipping costs for the coming year are

- A. \$4,800
- B. \$16,000
- C. \$20,000
- D. \$20,800

- Answer (A) is **incorrect**. The amount of \$4,800 is only the variable portion of total shipping cost.
- Answer (B) is **incorrect**. The amount of \$16,000 is only the fixed portion of total shipping cost.
- Answer (C) is **incorrect**. The amount of \$20,000 results from multiplying the per-pound shipping rate by the number of units, rather than the number of pounds, shipped.
- Answer (D) is **correct**. McFadden expects to ship 9,600 pounds of product at a rate of \$0.50 per pound for a total of \$4,800. Add this variable cost to the \$16,000 of fixed costs to arrive at a total of \$20,800 expected shipping costs for the year.

[1] Gleim #: 1.4.90 -- Source: CMA 696 3-19

If the beginning balance for May of the materials inventory account was \$27,500, the ending balance for May is \$28,750, and \$128,900 of materials were used during the month, the materials purchased during the month cost

- A. \$101,400
- B. \$127,650
- C. \$130,150
- D. \$157,650

- Answer (A) is **incorrect**. The amount of \$101,400 assumes zero ending inventory.
- Answer (B) is **incorrect**. The amount of \$127,650 results from reversing the treatment of beginning and ending inventories.
- Answer (C) is **correct**. Purchases equals usage adjusted for the inventory change. Hence, purchases equals \$130,150 (\$128,900 used – \$27,500 BI + \$28,750 EI).
- Answer (D) is **incorrect**. The amount of \$157,650 assumes zero beginning inventory.

[3] Gleim #: 1.4.92 -- Source: CMA 0205 2-14

The profit and loss statement of Madengrad Mining includes the following information for the current fiscal year:

Sales	\$160,000
Gross profit	48,000
Year-end finished goods inventory	58,300
Opening finished goods inventory	60,190

The cost of goods manufactured by Madengrad for the current fiscal year is

- A. \$46,110
- B. \$49,890
- C. \$110,110
- D. \$113,890

- Answer (A) is **incorrect**. Improperly beginning with gross profit instead of sales results in \$46,110.

- Answer (B) is **incorrect**. Improperly beginning with gross profit instead of sales, then improperly subtracting ending finished goods and adding beginning finished goods results in \$49,890.
- Answer (C) is **correct**. Madengrad's cost of goods manufactured can be calculated as follows:

Sales	\$160,000
Less: gross profit	<u>(48,000)</u>
Cost of goods sold	\$112,000
Add: ending finished goods	<u>58,300</u>
Goods available for sale	\$170,300
Less: beginning finished goods	<u>(60,190)</u>
Cost of goods manufactured	<u><u>\$110,110</u></u>

- Answer (D) is **incorrect**. Improperly subtracting ending finished goods and adding beginning finished goods results in \$113,890.

**[Fact Pattern #1]**

Madtrack Company's beginning and ending inventories for the month of November are

Production data for the month of November follows:

	<u>November 1</u>	<u>November 30</u>		
Direct materials	\$ 67,000	\$ 62,000	Direct labor	\$200,000
Work-in-process	145,000	171,000	Actual factory overhead	132,000
Finished goods	85,000	78,000	Direct materials purchased	163,000
			Transportation in	4,000
			Purchase returns and allowances	2,000

Madtrack uses one overhead control account and charges overhead to production at 70% of direct labor cost. The company does not formally recognize over- or underapplied overhead until year end.

**[4] Gleim #: 1.4.93 -- Source: CMA 1295 3-19**

(Refers to Fact Pattern #1)

Madtack Company's prime cost for November is

- A. \$370,000
- B. \$168,000
- C. \$363,000
- D. \$170,000

- Answer (A) is **correct**. Prime costs are the combined costs of direct materials and direct labor.

Beginning materials inventory	\$ 67,000
Add: purchases	163,000
Add: transportation in	4,000
Less: purchase returns	<u>(2,000)</u>
Materials available	\$232,000
Less: ending materials inventory	<u>(62,000)</u>
Materials used in production	<u>\$170,000</u>
Direct materials	\$170,000
Direct labor	<u>200,000</u>
Total prime costs	<u>\$370,000</u>

- Answer (B) is **incorrect**. The amount of \$168,000 equals purchases of materials adjusted for the change in inventories.
- Answer (C) is **incorrect**. The amount of \$363,000 incorporates the change in finished goods inventories.
- Answer (D) is **incorrect**. The amount of \$170,000 equals the materials used.

**[5] Gleim #: 1.4.94 -- Source: CMA 1295 3-20**

(Refers to Fact Pattern #1)

Madtack Company's total manufacturing cost for November is

- A. \$502,000
- B. \$503,000
- C. \$363,000
- D. \$510,000

- Answer (A) is **incorrect**. The amount of \$502,000 is based on actual overhead.
- Answer (B) is **incorrect**. The amount of \$503,000 incorporates the change in finished goods inventories.
- Answer (C) is **incorrect**. The amount of \$363,000 excludes overhead but includes the change in finished goods inventory.
- Answer (D) is **correct**. Total manufacturing cost is the sum of direct materials cost, direct labor cost, and manufacturing overhead.

Beginning materials	\$ 67,000
Add: purchases	163,000
Add: transportation in	4,000
Less: purchase returns	<u>(2,000)</u>
Materials available	\$232,000
Less: ending materials	<u>(62,000)</u>
Materials used in production	<u>\$170,000</u>
Direct materials	\$170,000
Direct labor	200,000
Manufacturing overhead (DL × 70%)	<u>140,000</u>
Total manufacturing costs	<u><u>\$510,000</u></u>

**[6] Gleim #: 1.4.95 -- Source: CMA 1295 3-21**

(Refers to Fact Pattern #1)

Madtack Company's cost of goods transferred to finished goods inventory for November is

- A. \$469,000
- B. \$477,000
- C. \$495,000
- D. \$484,000

- Answer (A) is **incorrect**. The amount of \$469,000 uses actual overhead and adjusts the figures for the change in finished goods inventory.
- Answer (B) is **incorrect**. The amount of \$477,000 includes the change in finished goods inventory in the calculation.
- Answer (C) is **incorrect**. The amount of \$495,000 uses materials purchased rather than materials used and also fails to adjust properly for transportation in.

- Answer (D) is **correct**. This solution requires a series of computations. Total manufacturing cost is the sum of direct materials cost, direct labor cost, and manufacturing overhead.

Beginning materials	\$ 67,000
Add: purchases	163,000
Add: transportation in	4,000
Less: purchase returns	<u>(2,000)</u>
Materials available	\$232,000
Less: ending materials	<u>(62,000)</u>
Materials used in production	<u>\$170,000</u>
Direct materials	\$170,000
Direct labor	200,000
Manufacturing overhead (DL × 70%)	<u>140,000</u>
Total manufacturing costs	<u>\$510,000</u>
Total manufacturing costs	\$510,000
Add: beginning work-in-process	145,000
Less: ending work-in-process	<u>(171,000)</u>
Costs transferred to finished goods	<u>\$484,000</u>

**[7] Gleim #: 1.4.96 -- Source: CMA 1295 3-22**

(Refers to Fact Pattern #1)

Madtrack Company's cost of goods sold for November is

- A. \$484,000
- B. \$491,000
- C. \$502,000
- D. \$476,000

- Answer (A) is **incorrect**. The amount of \$484,000 is the cost of goods manufactured.

- Answer (B) is **correct**. This solution requires a series of computations. Total manufacturing cost is the sum of direct materials cost, direct labor cost, and manufacturing overhead.

Beginning materials	\$ 67,000
Add: purchases	163,000
Add: transportation in	4,000
Less: purchase returns	<u>(2,000)</u>
Materials available	\$232,000
Less: ending materials	<u>(62,000)</u>
Materials used in production	<u><u>\$170,000</u></u>
 Direct materials	 \$170,000
Direct labor	200,000
Manufacturing overhead (DL × 70%)	<u>140,000</u>
Total manufacturing costs	<u><u>\$510,000</u></u>
 Total manufacturing costs	 \$510,000
Add: beginning work-in-process	145,000
Less: ending work-in-process	<u>(171,000)</u>
Costs transferred to finished goods	<u><u>\$484,000</u></u>
 Beginning finished goods inventory	 \$ 85,000
Add: cost of goods manufactured	<u>484,000</u>
Goods available for sale	\$569,000
Less: ending finished goods inventory	<u>(78,000)</u>
Cost of goods sold	<u><u>\$491,000</u></u>

- Answer (C) is **incorrect**. The amount of \$502,000 is based on cost of goods manufactured of \$495,000.
- Answer (D) is **incorrect**. The amount of \$476,000 is based on actual overhead costs and fails to adjust for the change in finished goods inventories.



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**[Fact Pattern #2]**

Alex Company had the following inventories at the beginning and end of the month of January:

	<u>January 1</u>	<u>January 31</u>
Finished goods	\$125,000	\$117,000
Work-in-process	235,000	251,000
Direct materials	134,000	124,000

The following additional manufacturing data were available for the month of January:

Direct materials purchased	\$189,000
Purchase returns and allowances	1,000
Transportation-in	3,000
Direct labor	300,000
Actual factory overhead	175,000

Alex Company applies factory overhead at a rate of 60% of direct labor cost, and any overapplied or underapplied factory overhead is deferred until the end of the year, December 31.

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**[8] Gleim #: 1.4.97 -- Source: CMA 690 4-1**

(Refers to Fact Pattern #2)

Alex Company's prime cost for January was

- A. \$199,000
- B. \$501,000
- C. \$489,000
- D. \$201,000

- Answer (A) is **incorrect**. Direct materials used without adjustments for purchase returns and transportation-in equals \$199,000.

- Answer (B) is **correct**. Prime cost is defined as those costs directly traceable to specific units of production, specifically direct labor and direct materials. According to the following statement of cost of goods manufactured, total prime cost was \$501,000.

Beginning direct materials inventory	\$ 134,000
Add: purchases	189,000
Less: purchase returns	(1,000)
Add: transportation-in	<u>3,000</u>
Total direct materials available	\$ 325,000
Less: ending direct materials inventory	<u>(124,000)</u>
Direct materials used	\$ 201,000
Direct labor	<u>300,000</u>
Total prime costs	<u><u>\$ 501,000</u></u>

- Answer (C) is **incorrect**. Direct materials purchased plus direct labor equals \$489,000.
- Answer (D) is **incorrect**. Direct materials used equals \$201,000.

**[9] Gleim #: 1.4.98 -- Source: CMA 690 4-3**

(Refers to Fact Pattern #2)

Alex Company's cost of goods manufactured for January was

- A. \$665,000
- B. \$681,000
- C. \$673,000
- D. \$657,000

- Answer (A) is **correct**. The cost of the goods manufactured is the cost of goods completed during the year. For a retailer, the equivalent is purchases. The COGM for Alex is \$665,000.

Beginning direct materials inventory	\$ 134,000
Add: purchases	189,000
Less: purchase returns	(1,000)
Add: transportation-in	<u>3,000</u>
Total direct materials available	\$ 325,000
Less: ending direct materials inventory	<u>(124,000)</u>
Direct materials used	\$ 201,000
Direct labor	300,000
Factory overhead (\$300,000 × 60%)	<u>180,000</u>
Total manufacturing cost	\$681,000
Add: beginning work-in-process	\$235,000
Less: ending work-in-process	<u>(\$251,000)</u>
Cost of goods manufactured	<u><u>\$665,000</u></u>

- Answer (B) is **incorrect**. Total manufacturing costs equal \$681,000.
- Answer (C) is **incorrect**. The cost of goods sold is \$673,000.
- Answer (D) is **incorrect**. Adding ending inventory and subtracting beginning inventory in the COGS calculation results in \$657,000.

**[10] Gleim #: 1.4.99 -- Source: CMA 690 4-4**

(Refers to Fact Pattern #2)

Alex Company's cost of goods sold for January was

- A. \$697,000
- B. \$681,000
- C. \$673,000
- D. \$657,000

- Answer (A) is **incorrect**. Prime cost, plus overhead applied, plus (instead of minus) the change in the work-in-process equals \$697,000.
- Answer (B) is **incorrect**. Prime cost plus overhead applied equals \$681,000.

- Answer (C) is **correct**. The calculation of the cost of goods sold requires the preparation of a partial income statement:

Beginning direct materials inventory	\$ 134,000
Add: purchases	189,000
Less: purchase returns	(1,000)
Add: transportation-in	<u>3,000</u>
Total direct materials available	\$ 325,000
Less: ending direct materials inventory	<u>(124,000)</u>
Direct materials used	\$ 201,000
Direct labor	300,000
Factory overhead (\$300,000 × 60%)	<u>180,000</u>
Total manufacturing cost	\$681,000
Add: beginning work-in-process	\$235,000
Less: ending work-in-process	<u>(\$251,000)</u>
Cost of goods manufactured	\$665,000
Add: beginning finished goods inventory	<u>\$125,000</u>
Goods available for sale	\$790,000
Less: ending finished goods inventory	<u>(117,000)</u>
Cost of goods sold	<u><u>\$673,000</u></u>

- Answer (D) is **incorrect**. Adding ending inventory and subtracting beginning inventory in the COGS calculation results in \$657,000.

**[11] Gleim #: 1.4.100 -- Source: CMA 690 4-5**

(Refers to Fact Pattern #2)

Alex Company's balance in factory overhead control for January was

- A. \$5,000 debit - overapplied.
  - B. \$5,000 credit - underapplied.
  - C. \$5,000 debit - underapplied.
  - D. \$5,000 credit - overapplied.
- Answer (A) is **incorrect**. Overapplied overhead results in a credit to overhead control.
  - Answer (B) is **incorrect**. Overhead is overapplied.
  - Answer (C) is **incorrect**. Overhead is overapplied.

- Answer (D) is **correct**. The factory overhead control account should have a debit of \$175,000 for the actual costs incurred and a credit for the \$180,000 (60% of direct labor) applied to production. Thus, the net effect is a \$5,000 credit balance resulting from the overapplication of overhead.

**[12] Gleim #: 1.4.101 -- Source: CMA 0205 2-15**

The schedule of cost of goods manufactured of Gruber Fittings, Inc., shows the following balances for its fiscal year end:

Direct manufacturing labor	\$ 280,000
Manufacturing overhead	375,000
Ending work-in-process inventory	230,000
Raw materials used in production	450,000
Cost of goods manufactured	1,125,000

The value of the work-in-process inventory at the beginning of the fiscal year was

- A. \$625,000
- B. \$250,000
- C. \$210,000
- D. \$20,000

- Answer (A) is **incorrect**. Failing to subtract manufacturing overhead results in \$625,000.
- Answer (B) is **correct**. The standard calculation for cost of goods manufactured can be applied “back into” Gruber Fittings’ beginning work-in-process inventory amount:

Direct materials	\$ 450,000
Direct labor	280,000
Manufacturing overhead	<u>375,000</u>
Total manufacturing costs	\$1,105,000
Add: beginning work-in-process	250,000
Less: ending work-in-process	<u>(230,000)</u>
Cost of goods manufactured	<u><u>\$1,125,000</u></u>

- Answer (C) is **incorrect**. Improperly adding direct materials, direct labor, overhead, and ending work-in-process, then subtracting cost of goods manufactured results in \$210,000.
- Answer (D) is **incorrect**. Failing to subtract ending work-in-process inventory results in \$20,000.

[13] Gleim #: 1.4.102 -- Source: CMA 0408 2-060

Given the following data for Scurry Company, what is the cost of goods sold?

Beginning inventory of finished goods	\$100,000
Cost of goods manufactured	700,000
Ending inventory of finished goods	200,000
Beginning work-in-process inventory	300,000
Ending work-in-process inventory	50,000

- A. \$500,000
- B. \$600,000
- C. \$800,000
- D. \$950,000

- Answer (A) is **incorrect**. The amount of \$500,000 results from failing to include beginning finished goods inventory.
- Answer (B) is **correct**. Scurry's cost of goods sold can be calculated as follows:

Beginning inventory of finished goods	\$ 100,000
Add: cost of goods manufactured	700,000
Less: ending inventory of finished goods	<u>(200,000)</u>
Cost of goods sold	<u><u>\$ 600,000</u></u>

- Answer (C) is **incorrect**. The amount of \$800,000 results from failing to subtract ending finished goods inventory.
- Answer (D) is **incorrect**. The amount of \$950,000 results from improperly including work-in-process inventories.

**[14] Gleim #: 1.4.103 -- Source: CMA 0408 2-080**

Kimber Company has the following unit cost for the current year:

Raw material	\$20.00
Direct labor	25.00
Variable manufacturing overhead	10.00
Fixed manufacturing overhead	<u>15.00</u>
Total unit cost	<u><u>\$70.00</u></u>

Fixed manufacturing cost is based on an annual activity level of 8,000 units. Based on these data, the total manufacturing cost expected to be incurred to manufacture 9,000 units in the current year is

- A. \$560,000
- B. \$575,000
- C. \$615,000
- D. \$630,000

- Answer (A) is **incorrect**. The amount of \$560,000 is the total manufacturing cost for the 8,000 unit level of production.
- Answer (B) is **incorrect**. The amount of \$575,000 results from improperly adjusting total fixed overhead cost, and failing to adjust variable costs, for the new level of production.
- Answer (C) is **correct**. Kimber's total manufacturing cost for the 9,000 unit production level can be calculated as follows:

	Activity Level		Per Unit Cost		Total Costs
Raw material	9,000	×	\$20	=	\$180,000
Direct labor	9,000	×	25	=	225,000
Variable overhead	9,000	×	10	=	90,000
Fixed overhead	8,000	×	15	=	<u>120,000</u>
					<u><u>\$615,000</u></u>

- Answer (D) is **incorrect**. The amount of \$630,000 results from improperly adjusting total fixed overhead cost for the new level of production.

[18] Gleim #: 1.4.107 -- Source: CMA 690 4-2

(Refers to Fact Pattern #2)

Alex Company's total manufacturing cost for January was

- A. \$681,000
- B. \$665,000
- C. \$489,000
- D. \$673,000

- Answer (A) is **correct**. The sum of direct materials used, direct labor, and factory overhead applied (60% of direct labor) is \$681,000.

Beginning direct materials inventory	\$ 134,000
Add: purchases	189,000
Less: purchase returns	(1,000)
Add: transportation-in	<u>3,000</u>
Total direct materials available	\$ 325,000
Less: ending direct materials inventory	<u>(124,000)</u>
Direct materials used	\$ 201,000
Direct labor	300,000
Factory overhead (\$300,000 × 60%)	<u>180,000</u>
Total manufacturing cost	<u><u>\$681,000</u></u>

- Answer (B) is **incorrect**. The cost of goods manufactured equals \$665,000.
- Answer (C) is **incorrect**. The direct materials purchased plus direct labor equals \$489,000.
- Answer (D) is **incorrect**. The cost of goods sold equals \$673,000.



[1] Gleim #: 1.5.108 -- Source: CMA 678 4-10

Committed costs are

- A. Costs that management decides to incur in the current period to enable the company to achieve objectives other than the filling of orders placed by customers.
  - B. Costs that are likely to respond to the amount of attention devoted to them by a specified manager.
  - C. Costs that are governed mainly by past decisions that established the present levels of operating and organizational capacity and that only change slowly in response to small changes in capacity.
  - D. Amortization of costs that were capitalized in previous periods.
- Answer (A) is **incorrect**. Costs incurred in a current period to achieve objectives other than the filling of orders by customers are known as discretionary costs.
  - Answer (B) is **incorrect**. Costs that are likely to respond to the amount of attention devoted to them by a specified manager are controllable costs.
  - Answer (C) is **correct**. Committed costs are those that are required as a result of past decisions.
  - Answer (D) is **incorrect**. Amortization of costs capitalized in previous periods is depreciation.

[2] Gleim #: 1.5.109 -- Source: CMA 678 4-11

Discretionary costs are costs that

- A. Management decides to incur in the current period to enable the company to achieve objectives other than the filling of orders placed by customers.
  - B. Are likely to respond to the amount of attention devoted to them by a specified manager.
  - C. Are governed mainly by past decisions that established the present levels of operating and organizational capacity and that only change slowly in response to small changes in capacity.
  - D. Will be unaffected by current managerial decisions.
- Answer (A) is **correct**. Discretionary costs are those that are incurred in the current period at the “discretion” of management and are not required to fill orders by customers.

- Answer (B) is **incorrect**. Costs that are likely to respond to the amount of attention devoted to them by a specified manager are controllable costs.
- Answer (C) is **incorrect**. Costs required as a result of past decisions are committed costs.
- Answer (D) is **incorrect**. Costs unaffected by managerial decisions are costs such as committed costs and depreciation that were determined by decisions of previous periods.

**[3] Gleim #: 1.5.110 -- Source: CMA 678 4-12**

Controllable costs are costs that

- A. Management decides to incur in the current period to enable the company to achieve objectives other than the filling of orders placed by customers.
  - B. Are likely to respond to the amount of attention devoted to them by a specified manager.
  - C. Fluctuate in total in response to small changes in the rate of utilization of capacity.
  - D. Will be unaffected by current managerial decisions.
- Answer (A) is **incorrect**. Costs incurred in a current period to achieve objectives other than the filling of orders by customers are known as discretionary costs.
  - Answer (B) is **correct**. Controllable costs can be affected by the efforts of a manager.
  - Answer (C) is **incorrect**. Costs that fluctuate with small changes in volume are variable costs.
  - Answer (D) is **incorrect**. Costs that are unaffected by managerial decisions are costs such as committed costs and depreciation that was determined by decisions of previous periods.

**[4] Gleim #: 1.5.111 -- Source: CMA 1292 3-4**

In joint-product costing and analysis, which one of the following costs is relevant when deciding the point at which a product should be sold to maximize profits?

- A. Separable costs after the split-off point.
- B. Joint costs to the split-off point.
- C. Sales salaries for the period when the units were produced.
- D. Purchase costs of the materials required for the joint products.

- Answer (A) is **correct**. Joint products are created from processing a common input. Joint costs are incurred prior to the split-off point and cannot be identified with a particular joint product. As a result, joint costs are irrelevant to the timing of sale. However, separable costs incurred after the split-off point are relevant because, if incremental revenues exceed the separable costs, products should be processed further, not sold at the split-off point.
- Answer (B) is **incorrect**. Joint costs have no effect on the decision as to when to sell a product.
- Answer (C) is **incorrect**. Sales salaries for the production period do not affect the decision.
- Answer (D) is **incorrect**. Purchase costs are joint costs.

**[7] Gleim #: 1.5.114 -- Source: CMA Sample Q3-6**

When compared with normal spoilage, abnormal spoilage

- A. Arises more frequently from factors that are inherent in the manufacturing process.
  - B. Is given the same accounting treatment as normal spoilage.
  - C. Is generally thought to be more controllable by production management than normal spoilage.
  - D. Is not typically influenced by the “tightness” of production standards.
- Answer (A) is **incorrect**. Normal spoilage arises more frequently from factors that are inherent in the manufacturing process.
  - Answer (B) is **incorrect**. Abnormal spoilage costs are treated as a loss, and normal spoilage costs are inventoried.
  - Answer (C) is **correct**. Spoiled goods are defective items that cannot be feasibly reworked. Traditional cost accounting systems distinguish between normal and abnormal spoilage because, in some operations, a degree of spoilage is viewed as inevitable. Normal spoilage occurs under normal, efficient operating conditions. It is spoilage that is uncontrollable in the short run and therefore should be expressed as a function of good output (treated as a product cost). Accordingly, normal spoilage is assigned to all good units in process costing systems, that is, all units that have passed the inspection point at which the spoilage was detected. If normal spoilage is attributable to a specific job, only the disposal value of the normally spoiled goods is removed from work-in-process, thereby assigning the cost of normal spoilage to the good units remaining in the specific job. Abnormal spoilage is not expected to occur under normal, efficient operating conditions. The cost of abnormal spoilage should be separately identified and reported. Abnormal spoilage is typically treated as a period cost (a loss) because it is unusual.

- Answer (D) is **incorrect**. The tighter the standards, the more likely that any spoilage will be deemed to be abnormal.

**[8] Gleim #: 1.5.115 -- Source: CMA 696 3-17**

The upper limit of a company's productive output capacity given its existing resources is called

- A. Excess capacity.
- B. Cycle-time capacity.
- C. Practical capacity.
- D. Theoretical capacity.

- Answer (A) is **incorrect**. Excess capacity is unused capacity.
- Answer (B) is **incorrect**. Manufacturing lead (cycle) time is the sum of setup time and manufacturing time for a customer order. It is a component of customer response time.
- Answer (C) is **correct**. Practical capacity is the maximum level at which output is produced efficiently, with an allowance for unavoidable interruptions, for example, for holidays and scheduled maintenance. Because this level will be higher than expected capacity, its use will ordinarily result in underapplied fixed factory overhead.
- Answer (D) is **incorrect**. Theoretical capacity makes no allowance for unavoidable interruptions.

**[9] Gleim #: 1.5.116 -- Source: CMA 1290 3-1**

Practical capacity as a plant capacity concept

- A. Assumes all personnel and equipment will operate at peak efficiency and total plant capacity will be used.
  - B. Does not consider idle time caused by inadequate sales demand.
  - C. Includes consideration of idle time caused by both limited sales orders and human and equipment inefficiencies.
  - D. Is the production volume that is necessary to meet sales demand for the next year.
- Answer (A) is **incorrect**. Theoretical capacity assumes all personnel and equipment will operate at peak efficiency and total plant capacity will be used.

- Answer (B) is **correct**. Practical capacity is the maximum level at which output is produced efficiently. It includes consideration of idle time caused by human and equipment inefficiencies but not by inadequate sales demand. Practical capacity exceeds the other commonly used denominator levels included in the calculation of the fixed factory overhead rate. Because practical capacity will almost always exceed the actual use of capacity, it will result in an unfavorable production volume variance. Moreover, this variance (the difference between budgeted fixed overhead and the fixed overhead applied based on standard input allowed for the actual output) will be greatest given a practical capacity measure. The unfavorable production volume variance is charged to income summary, so the effect of using a larger denominator volume is the more rapid write-off of fixed overhead (practical capacity may be used for federal income tax purposes).
- Answer (C) is **incorrect**. Practical capacity ignores demand.
- Answer (D) is **incorrect**. The production volume to meet a given production level may be more or less than practical capacity. Horngren, Foster, and Datar call this volume the master-budget volume.

**[10] Gleim #: 1.5.117 -- Source: CMA 691 3-27**

A controllable expense

- A. Is an expected future expense that will be different under various alternatives.
  - B. Is an expense whose actual amount will not normally differ from the standard (budget) amount.
  - C. Is one that is directly influenced at a given level of managerial authority within a given time period.
  - D. Is an expense that will remain semivariable in total over the relevant range in a given time period.
- Answer (A) is **incorrect**. An expected future expense that will be different under various alternatives is a differential (incremental) cost.
  - Answer (B) is **incorrect**. An expense whose actual amount will not normally differ from the standard (budget) amount is a controlled expense, not a controllable expense.
  - Answer (C) is **correct**. Controllable expenses are directly regulated by a manager of a responsibility center at a given level of production within a given time span.
  - Answer (D) is **incorrect**. Whether a cost is controllable or not is not determined by its behavior.

**[11] Gleim #: 1.5.118 -- Source: CMA 1295 3-27**

A cost that bears an observable and known relationship to a quantifiable activity base is a(n)

- A. Engineered cost.
- B. Indirect cost.
- C. Sunk cost.
- D. Target cost.

- Answer (A) is **correct**. A cost that bears an observable and known relationship to a quantifiable activity base is known as an engineered cost. Engineered costs have a clear relationship to output. Direct materials would be an example of an engineered cost.
- Answer (B) is **incorrect**. An indirect cost does not have a clear relationship to output.
- Answer (C) is **incorrect**. A sunk cost is the result of a past irrevocable action; it is not important to future decisions.
- Answer (D) is **incorrect**. A target cost is the maximum allowable cost of a product and is calculated before the product is designed or produced.

**[12] Gleim #: 1.5.119 -- Source: CMA 680 4-5**

The cost associated with abnormal spoilage ordinarily is charged to

- A. Inventory.
- B. A material variance account.
- C. Manufacturing overhead.
- D. A special loss account.

- Answer (A) is **incorrect**. Normal spoilage, not abnormal spoilage, costs are charged to inventory.
- Answer (B) is **incorrect**. Material variance accounts are only charged for the variances in material usage or material price, not the spoilage of product.
- Answer (C) is **incorrect**. While charging abnormal spoilage to manufacturing overhead is an occasional practice, it is not the ordinary practice.
- Answer (D) is **correct**. Abnormal spoilage is usually charged to a special loss account because it is not expected to occur under normal, efficient operating conditions. Because it is unusual, it should be separately reported as a period cost.

**[13] Gleim #: 1.5.120 -- Source: CMA 1277 5-5**

An imputed cost is

- A. The difference in total costs that results from selecting one alternative instead of another.
- B. A cost that cannot be avoided because it has already been incurred.
- C. A cost that does not entail any dollar outlay but is relevant to the decision-making process.
- D. A cost that continues to be incurred even though there is no activity.

- Answer (A) is **incorrect**. The difference in total costs that results from selecting one alternative instead of another is an incremental cost.
- Answer (B) is **incorrect**. A cost that cannot be avoided because it has already been incurred is a sunk cost.
- Answer (C) is **correct**. An imputed cost does not entail any dollar outlay but is relevant to the decision-making process.
- Answer (D) is **incorrect**. A cost that continues to be incurred even though there is no activity is a fixed cost.

**[14] Gleim #: 1.5.121 -- Source: CMA 694 3-8**

Committed costs are costs that

- A. Were capitalized and amortized in prior periods.
- B. Management decides to incur in the current period that do not have a clear cause and effect relationship between inputs and outputs.
- C. Result from a clear measurable relationship between inputs and outputs.
- D. Establish the current level of operating capacity and cannot be altered in the short run.

- Answer (A) is **incorrect**. Committed costs have not been amortized.
- Answer (B) is **incorrect**. Discretionary costs are those that do not have a clear cause and effect relationship between inputs and outputs.
- Answer (C) is **incorrect**. Engineered costs are those that have a measurable relationship between inputs and outputs.

- Answer (D) is **correct**. Committed costs result when a going concern holds fixed assets such as property, plant, and equipment. The related committed costs include depreciation, long-term lease payments, and insurance. Such costs establish the present level of operating capacity and cannot be altered in the short run.

**[15] Gleim #: 1.5.122 -- Source: CMA 690 5-27**

Costs that arise from periodic budgeting decisions that have no strong input-output relationship are commonly called

- A. Committed costs.
- B. Discretionary costs.
- C. Opportunity costs.
- D. Differential costs.

- Answer (A) is **incorrect**. Committed costs are fixed costs arising from the possession of plant and equipment and a basic organization. These costs are affected primarily by long-run decisions as to a company's desired capacity.
- Answer (B) is **correct**. Discretionary costs are characterized by uncertainty about the relationship between input (the costs) and the value of the related output. Advertising and research are examples. They should be contrasted with engineered costs, that is, costs having a clear input-output relationship (e.g., the cost of direct materials).
- Answer (C) is **incorrect**. Opportunity cost is the return available from the next best use of a resource.
- Answer (D) is **incorrect**. Differential (incremental) costs are those that vary among decision options.



**[Fact Pattern #1]**

Huron Industries has recently developed two new products, a cleaning unit for video discs and a disc duplicator for reproducing movies taken with a video camera. However, Huron has only enough plant capacity to introduce one of these products during the current year. The company controller has gathered the following data to assist management in deciding which product should be selected for production.

Huron's fixed overhead includes rent and utilities, equipment depreciation, and supervisory salaries. Selling and administrative expenses are not allocated to products.

	Disc Duplicator	Cleaning Unit
Raw materials	\$ 44.00	\$ 36.00
Machining at \$12 per hr.	18.00	15.00
Assembly at \$10 per hr.	30.00	10.00
Variable overhead at \$8 per hr.	36.00	18.00
Fixed overhead at \$4 per hr.	18.00	9.00
Total cost	<u>\$ 146.00</u>	<u>\$ 88.00</u>
Suggested selling price	\$ 169.95	\$ 99.98
Actual research and development costs	\$240,000	\$175,000
Proposed advertising and promotion costs	\$500,000	\$350,000

**[16] Gleim #: 1.5.123 -- Source: CMA 1294 3-1**

(Refers to Fact Pattern #1)

For Huron's disc duplicator, the unit costs for raw materials, machining, and assembly represent

- A. Conversion costs.
- B. Separable costs.
- C. Committed costs.
- D. Prime costs.

- Answer (A) is **incorrect**. Conversion costs consist of direct labor and overhead.
- Answer (B) is **incorrect**. Separable costs are incurred beyond the point at which jointly produced items become separately identifiable.
- Answer (C) is **incorrect**. Committed costs result when an entity holds fixed assets; examples include long-term lease payments and depreciation.
- Answer (D) is **correct**. Raw materials and direct labor (such as machining and assembly) are a manufacturer's prime costs.

**[17] Gleim #: 1.5.124 -- Source: CMA 1294 3-3**

(Refers to Fact Pattern #1)

The total overhead cost of \$27.00 for Huron's video disc cleaning unit is a

- A. Carrying cost.
- B. Discretionary cost.
- C. Sunk cost.
- D. Mixed cost.

- Answer (A) is **incorrect**. A carrying cost is the cost of carrying inventory; examples are insurance and rent on warehouse facilities.
- Answer (B) is **incorrect**. A discretionary cost (a managed or program cost) results from a periodic decision about the total amount to be spent. It is also characterized by uncertainty about the relationship between input and the value of the related output. Examples are advertising and R&D costs.
- Answer (C) is **incorrect**. A sunk cost is a past cost or a cost that the entity has irrevocably committed to incur. Because it is unavoidable, it is not relevant to future decisions.
- Answer (D) is **correct**. A mixed cost is a combination of fixed and variable elements. Consequently, the \$27 of total overhead cost is mixed because it contains both fixed overhead and variable overhead.

**[18] Gleim #: 1.5.125 -- Source: CMA 1294 3-4**

(Refers to Fact Pattern #1)

Research and development costs for Huron's two new products are

- A. Conversion costs.
- B. Sunk costs.
- C. Relevant costs.
- D. Avoidable costs.

- Answer (A) is **incorrect**. Conversion costs are composed of direct labor and factory overhead, that is, costs incurred to convert materials into a finished product.
- Answer (B) is **correct**. Before they are incurred, R&D costs are often considered to be discretionary. However, Huron's R&D costs have already been incurred. Thus, they are sunk costs. A sunk cost is a past cost or a cost that the entity has irrevocably committed to incur. Because it is unavoidable, it is not relevant to future decisions.

- Answer (C) is **incorrect**. Relevant costs are expected future costs that vary with the action taken. A cost that has already been incurred is not relevant to future decisions.
- Answer (D) is **incorrect**. Avoidable costs may be eliminated by not engaging in an activity or by performing it more efficiently.

**[19] Gleim #: 1.5.126 -- Source: CMA 1294 3-5**

(Refers to Fact Pattern #1)

The advertising and promotion costs for the product selected by Huron will be

- A. Discretionary costs.
- B. Opportunity costs.
- C. Committed costs.
- D. Incremental costs.

- Answer (A) is **correct**. A discretionary cost (a managed or program cost) results from a periodic decision about the total amount to be spent. It is also characterized by uncertainty about the relationship between input and the value of the related output. Examples are advertising and R&D costs.
- Answer (B) is **incorrect**. An opportunity cost is the maximum benefit forgone by using a scarce resource for a given purpose. It is the benefit provided by the next best use of a particular resource.
- Answer (C) is **incorrect**. Committed costs are those for which management has made a long-term commitment. They typically result when a firm holds fixed assets. Examples include long-term lease payments and depreciation.
- Answer (D) is **incorrect**. Incremental costs are the differences in costs between two decision choices.

**[20] Gleim #: 1.5.127 -- Source: CMA 1294 3-6**

(Refers to Fact Pattern #1)

The costs included in Huron's fixed overhead are

- A. Joint costs.
- B. Committed costs.
- C. Opportunity costs.
- D. Prime costs.

- Answer (A) is **incorrect**. Joint (common) costs are incurred in the production of two or more inseparable products up to the point at which the products become separable.
- Answer (B) is **correct**. Committed costs are those for which management has made a long-term commitment. They typically result when a firm holds fixed assets. Examples include long-term lease payments and depreciation. Committed costs are typically fixed costs.
- Answer (C) is **incorrect**. An opportunity cost is the maximum benefit forgone by using a scarce resource for a given purpose; it is the benefit provided by the next best use of a particular resource.
- Answer (D) is **incorrect**. Prime costs are composed of raw material and direct labor costs.

**[28] Gleim #: 1.5.135 -- Source: CMA 0408 2-082**

Johnson waits two hours in line to buy a ticket to an NCAA Final Four Tournament. The opportunity cost of buying the \$200 ticket is

- A. Johnson's best alternative use of the \$200.
  - B. Johnson's best alternative use of the 2 hours it took to wait in line.
  - C. The value of the \$200 to the ticket agent.
  - D. Johnson's best alternative use of both the \$200 and the 2 hours spent in line.
- Answer (A) is **incorrect**. The best alternative use of the time it took to wait in line was also an opportunity cost.
  - Answer (B) is **incorrect**. The best alternative use of the cash outlay was also an opportunity cost.
  - Answer (C) is **incorrect**. The value perceived by the ticket agent is not relevant to Johnson's opportunity cost.
  - Answer (D) is **correct**. Opportunity cost, also called implicit cost, is the maximum benefit forgone by using a scarce resource for a given purpose and not for the next-best alternative. An example is the wages forgone by attending college instead of working full-time. Opportunity costs are contrasted with outlay costs, which require actual cash disbursements.

**[Fact Pattern #2]**

Gleason Co. has two products, a frozen dessert and ready-to-bake breakfast rolls, ready for introduction. However, plant capacity is limited, and only one product can be introduced at present. Therefore, Gleason has conducted a market study, at a cost of \$26,000, to determine which product will be more profitable. The results of the study follow.

<u>Sales of Desserts at \$1.80/unit</u>		<u>Sales of Rolls at \$1.20/unit</u>	
<u>Volume</u>	<u>Probability</u>	<u>Volume</u>	<u>Probability</u>
250,000	.30	200,000	.20
300,000	.40	250,000	.50
350,000	.20	300,000	.20
400,000	.10	350,000	.10

The costs associated with the two products have been estimated by Gleason's cost accounting department and are as follows:

	<u>Dessert</u>	<u>Rolls</u>
Ingredients per unit	\$ .40	\$ .25
Direct labor per unit	.35	.30
Variable overhead per unit	.40	.20
Production tooling*	48,000	25,000
Advertising	30,000	20,000

\*Gleason treats production tooling as a current operating expense rather than capitalizing it as a fixed asset.

**[29] Gleim #: 1.5.136 -- Source: CMA 687 5-26**

(Refers to Fact Pattern #2)

The advertising expense estimated by Gleason for the introduction of the new products is an example of a(n)

- A. Conversion cost.
- B. Discretionary cost.
- C. Committed cost.
- D. Opportunity cost.

- Answer (A) is **incorrect**. Conversion costs are incurred for labor and overhead.

- Answer (B) is **correct**. Discretionary costs refer to fixed costs that are not absolutely necessary to operate in the current period. The level of these costs is subject to a decision made by management each period. A key characteristic of discretionary costs is that there is no clearly measurable relationship between input (the costs) and output. Advertising is a good example of a discretionary fixed cost.
- Answer (C) is **incorrect**. Committed costs are those fixed costs arising from the possession of plant and equipment and a basic organization. These costs are affected primarily by long-run decisions as to a company's desired capacity.
- Answer (D) is **incorrect**. An opportunity cost represents the maximum revenue that could have been earned on the next best alternative use of a resource.

[1] Gleim #: 1.6.137 -- Source: CMA 1296 3-18

Which one of the following alternatives correctly classifies the business application to the appropriate costing system?

	<u>Job Costing System</u>	<u>Process Costing System</u>
A.	Wallpaper manufacturer	Oil refinery
B.	Aircraft assembly	Public accounting firm
C.	Paint manufacturer	Retail banking
D.	Print shop	Beverage manufacturer

- Answer (A) is **incorrect**. A wallpaper manufacturer would use a process costing system.
- Answer (B) is **incorrect**. A public accounting firm would use a job costing system.
- Answer (C) is **incorrect**. A paint manufacturer would use a process costing system.
- Answer (D) is **correct**. A job costing system is used when products differ from one customer to the next, that is, when products are heterogeneous. A process costing system is used when similar products are mass produced on a continuous basis. A print shop, for example, would use a job costing system because each job will be unique. Each customer provides the specifications for the product desired. A beverage manufacturer, however, would use a process costing system because homogeneous units are produced continuously.

[2] Gleim #: 1.6.138 -- Source: CMA 1290 3-12

Which one of the following considers the impact of fixed overhead costs?

- A. Full absorption costing.
- B. Marginal costing.
- C. Direct costing.
- D. Variable costing.

- Answer (A) is **correct**. Full absorption costing treats fixed factory overhead costs as product costs. Thus, inventory and cost of goods sold include (absorb) fixed factory overhead.
- Answer (B) is **incorrect**. Marginal costing considers only the incremental costs of producing an additional unit of product. In most cases marginal costs are variable costs.
- Answer (C) is **incorrect**. Direct (variable) costing treats only variable costs as product costs.

- Answer (D) is **incorrect**. Direct (variable) costing treats only variable costs as product costs.

**[3] Gleim #: 1.6.139 -- Source: CMA 1295 3-26**

An accounting system that collects financial and operating data on the basis of the underlying nature and extent of the cost drivers is

- A. Direct costing.
- B. Activity-based costing.
- C. Cycle-time costing.
- D. Variable costing.

- Answer (A) is **incorrect**. Direct costing is a system that treats fixed costs as period costs; in other words, production costs consist only of variable costs, while fixed costs are expensed as incurred.
- Answer (B) is **correct**. An activity-based costing (ABC) system identifies the causal relationship between the incurrence of cost and the underlying activities that cause those costs. Under an ABC system, costs are applied to products on the basis of resources consumed (drivers).
- Answer (C) is **incorrect**. Cycle time is the period from the time a customer places an order to the time that product is delivered.
- Answer (D) is **incorrect**. Variable costing is the same as direct costing, which expenses fixed costs as incurred.

**[4] Gleim #: 1.6.140 -- Source: CMA 1295 3-15**

Because this allocation method recognizes that service departments often provide each other with interdepartmental service, it is theoretically considered to be the most accurate method for allocating service department costs to production departments. This method is the

- A. Direct method.
- B. Variable method.
- C. Reciprocal method.
- D. Linear method.

- Answer (A) is **incorrect**. The direct method does not recognize the fact that service departments might provide services to each other; all costs are assigned directly to production departments.



- Answer (B) is **incorrect**. The variable method is a nonsense term as used here.
- Answer (C) is **correct**. The three most common methods of allocating service department costs are the direct method, the step method, and the reciprocal method (also called the simultaneous equations method). The reciprocal method is theoretically the preferred method because it recognizes reciprocal services among service departments.
- Answer (D) is **incorrect**. The linear method is not one of the methods used to allocate departmental costs.

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**[Fact Pattern #1]**

Huron Industries has recently developed two new products, a cleaning unit for video discs and a disc duplicator for reproducing movies taken with a video camera. However, Huron has only enough plant capacity to introduce one of these products during the current year. The company controller has gathered the following data to assist management in deciding which product should be selected for production.

Huron's fixed overhead includes rent and utilities, equipment depreciation, and supervisory salaries. Selling and administrative expenses are not allocated to products.

	Disc Duplicator	Cleaning Unit
Raw materials	\$ 44.00	\$ 36.00
Machining at \$12 per hr.	18.00	15.00
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Variable overhead at \$8 per hr.	36.00	18.00
Fixed overhead at \$4 per hr.	18.00	9.00
Total cost	<u>\$ 146.00</u>	<u>\$ 88.00</u>
Suggested selling price	\$ 169.95	\$ 99.98
Actual research and development costs	\$240,000	\$175,000
Proposed advertising and promotion costs	\$500,000	\$350,000

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**[5] Gleim #: 1.6.141 -- Source: CMA 1294 3-2**

(Refers to Fact Pattern #1)

The difference between the \$99.98 suggested selling price for Huron's video disc cleaning unit and its total unit cost of \$88.00 represents the unit's

- A. Contribution margin ratio.
- B. Gross profit.
- C. Contribution.
- D. Gross profit margin ratio.

- Answer (A) is **incorrect**. Contribution margin ratio is the ratio of contribution margin (sales – variable costs) to sales.
- Answer (B) is **correct**. Gross profit is the difference between sales price and the full absorption cost of goods sold.
- Answer (C) is **incorrect**. Contribution (margin) is the difference between unit selling price and unit variable costs. Fixed costs are not considered.
- Answer (D) is **incorrect**. The gross profit margin ratio equals gross profit divided by sales.

**[6] Gleim #: 1.6.142 -- Source: CMA 696 3-15**

In target costing,

- A. The market price of the product is taken as a given.
  - B. Only raw materials, labor, and variable overhead cannot exceed a threshold target.
  - C. Only raw materials cannot exceed a threshold target.
  - D. Raw materials are recorded directly to cost of goods sold.
- Answer (A) is **correct**. Target costing begins with a target price, which is the expected market price given the company's knowledge of its customers and competitors. Subtracting the unit target profit margin determines the long-term target cost. If this cost is lower than the full cost, the company may need to adopt comprehensive cost-cutting measures. For example, in the furniture industry, certain price points are popular with buyers: a couch might sell better at \$400 than at \$200 because consumers question the quality of a \$200 couch and thus will not buy the lower-priced item. The result is that furniture manufacturers view \$400 as the target price of a couch, and the cost must be lower.
  - Answer (B) is **incorrect**. All product cost categories are addressed by target costing.
  - Answer (C) is **incorrect**. All product cost categories are addressed by target costing.
  - Answer (D) is **incorrect**. The manner in which raw materials costs are accounted for is irrelevant.

[7] Gleim #: 1.6.143 -- Source: CMA 1296 3-29

Life-cycle costing

- A. Is sometimes used as a basis for cost planning and product pricing.
  - B. Includes only manufacturing costs incurred over the life of the product.
  - C. Includes only manufacturing cost, selling expense, and distribution expense.
  - D. Emphasizes cost savings opportunities during the manufacturing cycle.
- Answer (A) is **correct**. Life-cycle costing estimates a product's revenues and expenses over its expected life cycle. This approach is especially useful when revenues and related costs do not occur in the same periods. It emphasizes the need to price products to cover all costs, not just those for production. Hence, costs are determined for all value-chain categories: upstream (R&D, design), manufacturing, and downstream (marketing, distribution, and customer service). The result is to highlight upstream and downstream costs in the cost planning process that often receive insufficient attention.
  - Answer (B) is **incorrect**. The life-cycle model includes the upstream (R&D and design) and downstream (marketing, distribution, and customer service) elements of the value chain as well as manufacturing costs.
  - Answer (C) is **incorrect**. The life-cycle model includes the upstream (R&D and design) and downstream (marketing, distribution, and customer service) elements of the value chain as well as manufacturing costs.
  - Answer (D) is **incorrect**. Life-cycle costing emphasizes the significance of locked-in costs, target costing, and value engineering for pricing and cost control. Thus, cost savings at all stages of the life cycle are important.

[8] Gleim #: 1.6.144 -- Source: CMA 1273 4-1

Which of the following statements is true for a firm that uses variable costing?

- A. The cost of a unit of product changes because of changes in number of units manufactured.
  - B. Profits fluctuate with sales.
  - C. An idle facility variation is calculated.
  - D. Product costs include variable administrative costs.
- Answer (A) is **incorrect**. The cost of a unit of product changing owing to a change in the number of units manufactured is a characteristic of absorption costing systems.

- Answer (B) is **correct**. In a variable costing system, only the variable costs are recorded as product costs. All fixed costs are expensed in the period incurred. Because changes in the relationship between production levels and sales levels do not cause changes in the amount of fixed manufacturing cost expensed, profits more directly follow the trends in sales.
- Answer (C) is **incorrect**. Idle facility variation is a characteristic of absorption costing systems.
- Answer (D) is **incorrect**. Neither variable nor absorption costing includes administrative costs in inventory.

**[9] Gleim #: 1.6.145 -- Source: CMA 697 3-3**

Which method of inventory costing treats direct manufacturing costs and manufacturing overhead costs, both variable and fixed, as inventoriable costs?

- A. Direct costing.
- B. Variable costing.
- C. Absorption costing.
- D. Conversion costing.

- Answer (A) is **incorrect**. Variable (direct) costing does not inventory fixed overhead.
- Answer (B) is **incorrect**. Variable (direct) costing does not inventory fixed overhead.
- Answer (C) is **correct**. Absorption (full) costing considers all manufacturing costs to be inventoriable as product costs. These costs include variable and fixed manufacturing costs, whether direct or indirect. The alternative to absorption is known as variable (direct) costing.
- Answer (D) is **incorrect**. Conversion costs include direct labor and overhead but not direct materials.

**[10] Gleim #: 1.6.146 -- Source: CMA 1295 3-28**

The difference between the sales price and total variable costs is

- A. Gross operating profit.
- B. Net profit.
- C. The breakeven point.
- D. The contribution margin.

- Answer (A) is **incorrect**. Gross operating profit is the net result after deducting all manufacturing costs from sales, including both fixed and variable costs.

- Answer (B) is **incorrect**. Net profit is the remainder after deducting from revenue all costs, both fixed and variable.
- Answer (C) is **incorrect**. The breakeven point is the level of sales that equals the sum of fixed and variable costs.
- Answer (D) is **correct**. The contribution margin is calculated by subtracting all variable costs from sales revenue. It represents the portion of sales that is available for covering fixed costs and profit.

**[11] Gleim #: 1.6.147 -- Source: CMA 694 3-19**

Which one of the following is **least** likely to be involved in establishing standard costs for evaluation purposes?

- A. Budgetary accountants.
- B. Industrial engineers.
- C. Top management.
- D. Quality control personnel.

- Answer (A) is **incorrect**. Budgetary accountants are involved in the setting of standard costs.
- Answer (B) is **incorrect**. Industrial engineers are involved in the setting of standard costs.
- Answer (C) is **correct**. A standard cost is an estimate of what a cost should be under normal operating conditions based on studies by accountants and engineers. In addition, line management is usually involved in the setting of standard costs as are quality control personnel. Top management would not be involved because cost estimation is a lower level operating activity. Participation by affected employees in all control systems permits all concerned to understand both performance levels desired and the measurement criteria being applied.
- Answer (D) is **incorrect**. Quality control personnel are involved in the setting of standard costs.

**[12] Gleim #: 1.6.148 -- Source: CMA 1291 3-11**

A difference between standard costs used for cost control and budgeted costs

- A. Can exist because standard costs must be determined after the budget is completed.
- B. Can exist because standard costs represent what costs should be, whereas budgeted costs represent expected actual costs.
- C. Can exist because budgeted costs are historical costs, whereas standard costs are based on engineering studies.
- D. Cannot exist because they should be the same amounts.

- Answer (A) is **incorrect**. Standard costs are determined independently of the budget.
- Answer (B) is **correct**. Standard costs are predetermined, attainable unit costs. Standard cost systems isolate deviations (variances) of actual from expected costs. One advantage of standard costs is that they facilitate flexible budgeting. Accordingly, standard and budgeted costs should not differ when standards are currently attainable. However, in practice, budgeted (estimated actual) costs may differ from standard costs when operating conditions are not expected to reflect those anticipated when the standards were developed.
- Answer (C) is **incorrect**. Budgeted costs are expected future costs, not historical costs.
- Answer (D) is **incorrect**. Budgeted and standard costs should in principle be the same, but in practice they will differ when standard costs are not expected to be currently attainable.

**[13] Gleim #: 1.6.149 -- Source: CMA 695 3-10**

A standard costing system is most often used by a firm in conjunction with

- A. Management by objectives.
  - B. Target (hurdle) rates of return.
  - C. Participative management programs.
  - D. Flexible budgets.
- Answer (A) is **incorrect**. MBO is a behavioral, communication-oriented, responsibility approach to employee self-direction. Although MBO can be used with standard costs, the two are not necessarily related.
  - Answer (B) is **incorrect**. Rates of return relate to revenues as well as costs, but a standard costing system concerns costs only.
  - Answer (C) is **incorrect**. Participative management stresses multidirectional communication. It has no relationship to standard costs.

- Answer (D) is **correct**. A standard cost is an estimate of what a cost should be under normal operating conditions based on accounting and engineering studies. Comparing actual and standard costs permits an evaluation of the effectiveness of managerial performance. Because of the impact of fixed costs in most businesses, a standard costing system is usually not effective unless the company also has a flexible budgeting system. Flexible budgeting uses standard costs to prepare budgets for multiple activity levels.

**[15] Gleim #: 1.6.151 -- Source: CMA 694 3-6**

The term “gross margin” for a manufacturing firm refers to excess of sales over

- A. Cost of goods sold, excluding fixed indirect manufacturing costs.
  - B. All variable costs, including variable selling and administrative expenses.
  - C. Cost of goods sold, including fixed indirect manufacturing costs.
  - D. Manufacturing costs, excluding fixed manufacturing costs.
- Answer (A) is **incorrect**. Fixed indirect manufacturing costs are included in the calculation of gross margin.
  - Answer (B) is **incorrect**. Fixed costs are also included in the calculation of gross margin.
  - Answer (C) is **correct**. Gross margin or gross profit is the excess of sales over cost of goods sold, calculated on a full absorption basis. Cost of goods sold would include all manufacturing costs, both fixed and variable.
  - Answer (D) is **incorrect**. Fixed costs are also included in the calculation of gross margin.

**[18] Gleim #: 1.6.154 -- Source: CMA Sample Q3-2**

Consider the following information for Richardson Company for the prior year:

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs were affected by production volume only, and all variable selling costs were affected by sales volume only.
- Budgeted per unit revenues and costs were as follows:

	<u>Per unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Other variable manufacturing costs	10
Fixed selling costs	5
Variable selling costs	12
Fixed selling costs (\$33,600 total)	4
Fixed administrative costs (\$1,800 total)	2

The contribution margin earned by Richardson for the prior year was

- A. \$25,200
- B. \$28,000
- C. \$31,500
- D. \$35,000

- Answer (A) is **correct**. Contribution margin equals revenues minus all variable costs. Given no WIP and no beginning finished goods, the contribution margin was \$25,200 [900 units × (\$100 – \$30 – \$20 – \$10 – \$12)]. The variable costs of producing the units not sold are embedded in ending inventory rather than expensed as part of cost of goods sold. The fixed costs are thus excluded from computation of the contribution margin.
- Answer (B) is **incorrect**. The amount of \$28,000 results from assuming the sale of 1,000 units.
- Answer (C) is **incorrect**. The amount of \$31,500 results from assuming a UCM of \$35. This computation includes fixed unit selling costs of \$5 but excludes the \$12 per unit variable selling costs.
- Answer (D) is **incorrect**. The amount of \$35,000 results from assuming a UCM of \$35 and sales of 1,000 units.





[1] Gleim #: 2.1.1 -- Source: CMA 696 3-29

Lucy Sportswear manufactures a specialty line of T-shirts using a job-order costing system. During March, the following costs were incurred in completing job ICU2: direct materials, \$13,700; direct labor, \$4,800; administrative, \$1,400; and selling, \$5,600. Overhead was applied at the rate of \$25 per machine hour, and job ICU2 required 800 machine hours. If job ICU2 resulted in 7,000 good shirts, the cost of goods sold per unit would be

- A. \$6.50
- B. \$6.30
- C. \$5.70
- D. \$5.50

- Answer (A) is **incorrect**. The amount of \$6.50 includes selling and administrative expenses.
- Answer (B) is **incorrect**. The amount of \$6.30 includes selling costs.
- Answer (C) is **incorrect**. The amount of \$5.70 includes administrative expenses.
- Answer (D) is **correct**. Cost of goods sold is based on the manufacturing costs incurred in production but does not include selling or general and administrative expenses. Manufacturing costs equal \$38,500 [ $\$13,700 \text{ DM} + \$4,800 \text{ DL} + (800 \text{ hours} \times \$25) \text{ OH}$ ]. Thus, per-unit cost is \$5.50 ( $\$38,500 \div 7,000 \text{ units}$ ).

[6] Gleim #: 2.1.6 -- Source: CMA 0205 2-22

Kepler Optics makes lenses for telescopes. Because Kepler will only sell lenses of the highest quality, the normal spoilage during a reporting period is 1,000 units. At the beginning of the current reporting period, Kepler had 2,200 units in inventory, and during the period, production was started and completed on 4,000 units. Units in inventory at the end of the current reporting period were 1,500, and the units transferred out were 3,000. During this period, the abnormal spoilage for Kepler's lens production was

- A. 700 units.
- B. 1,000 units.
- C. 1,700 units.
- D. 3,200 units.

- Answer (A) is **correct**. Kepler's abnormal spoilage for the period can be calculated as follows:

Beginning work-in-process	2,200
Add: started and completed	4,000
Less: transferred out	(3,000)
Less: ending work-in-process	<u>(1,500)</u>
Total spoilage for period	1,700
Less: normal spoilage	<u>(1,000)</u>
Abnormal spoilage for period	<u><u>700</u></u>

- Answer (B) is **incorrect**. The normal spoilage for the period is 1,000 units.
- Answer (C) is **incorrect**. The total spoilage for the period is 1,700 units.
- Answer (D) is **incorrect**. Failing to subtract the ending work-in-process to arrive at total spoilage results in 3,200 units.

[7] Gleim #: 2.1.7 -- Source: CIA 593 IV-6

A manufacturing firm may experience both normal and abnormal spoilage in its operations. The costs of both normal and abnormal spoilage are accounted for in the accounting records. The costs associated with any abnormal spoilage are

- Assigned to the good units transferred to finished goods.
  - Allocated between the units transferred to finished goods and those remaining in work-in-process.
  - Charged to the manufacturing overhead control account.
  - Charged to a special abnormal spoilage loss account.
- Answer (A) is **incorrect**. Assigning spoilage costs to finished goods is an appropriate method of accounting for normal spoilage traceable to a job or process.
  - Answer (B) is **incorrect**. Allocating spoilage costs between finished goods and work-in-process is an appropriate method of accounting for normal spoilage traceable to a job or process, provided the units in process have passed the inspection point.
  - Answer (C) is **incorrect**. Charging spoilage costs to manufacturing overhead is an appropriate method of accounting for normal spoilage, assuming the allowance for normal spoilage is incorporated into the predetermined overhead rate.
  - Answer (D) is **correct**. Abnormal spoilage should be written-off to a special account that is separately reported in the income statement. Costs associated with abnormal spoilage are not inventoried and are therefore treated as a loss in the period of detection.

[9] Gleim #: 2.1.9 -- Source: CMA 0408 2-129

Darden Manufacturing, a calendar-year corporation, had \$17,000 of spoilage during April that production management characterized as abnormal. The spoilage was incurred on Job No. 532, which was sold 3 months later for \$459,000. Which of the following correctly describes the impact of the spoilage on Darden's unit manufacturing cost for Job No. 532 and on the year's operating income?

	Unit Manufacturing Cost	Operating Income
A.	Increase	No effect
B.	Increase	Decrease
C.	No effect	Decrease
D.	No effect	Not enough information to judge

- Answer (A) is **incorrect**. Under job-order costing, the difference between the disposal value of the spoiled goods and the value of the goods in work-in-process control must be recognized as a loss.
- Answer (B) is **incorrect**. Under job-order costing, unit manufacturing cost is unaffected by abnormal spoilage.
- Answer (C) is **correct**. Under job-order costing, unit manufacturing cost is unaffected by abnormal spoilage. Also, the difference between the disposal value of the spoiled goods and the value of the goods in work-in-process control must be recognized as a loss, which will decrease operating income.
- Answer (D) is **incorrect**. Under job-order costing, the difference between the disposal value of the spoiled goods and the value of the goods in work-in-process control must be recognized as a loss.

**[Fact Pattern #1]**

Levittown Company employs a process cost system for its manufacturing operations. All direct materials are added at the beginning of the process and conversion costs are added proportionately. Levittown's production quantity schedule for November is reproduced in the next column.

Work-in-process November 1 (60% complete as to conversion costs)	1,000
Units started during November	<u>5,000</u>
Total units to account for	<u>6,000</u>
Units completed and transferred out from beginning inventory	1,000
Units started and completed during November	3,000
Work-in-process on November 30 (20% complete as to conversion costs)	<u>2,000</u>
Total units accounted for	<u>6,000</u>

**[9] Gleim #: 2.2.18 -- Source: CMA 1286 4-14**

(Refers to Fact Pattern #1)

Using the FIFO method, Levittown's equivalent units for direct materials for November are

- A. 5,000 units.
- B. 6,000 units.
- C. 4,400 units.
- D. 3,800 units.

- Answer (A) is **correct**. The computation of equivalent units for a period using the FIFO method of process costing includes only the conversion costs and material added to the product in that period and excludes any work done in previous periods. Accordingly, FIFO equivalent units include work and material to complete BWIP, plus work and material to complete units started this period, minus work and material needed to complete EWIP. Given that all materials are added at the beginning of the process, only those units started during November would have received materials in that month. Because 5,000 units were started, the equivalent units for direct materials equal 5,000.
- Answer (B) is **incorrect**. The total units to account for is 6,000.
- Answer (C) is **incorrect**. The number of units completed and transferred out from BI plus units started and completed in November plus 20% of work-in-process on November 30 equals 4,400 (1,000 + 3,000 + 400).

- Answer (D) is **incorrect**. The equivalent units for direct materials is not 3,800. Only those units started during November would have received materials in that month. Therefore, equivalent units for direct materials equal 5,000.

**[10] Gleim #: 2.2.19 -- Source: CMA 1286 4-15**

(Refers to Fact Pattern #1)

Using the FIFO method, Levittown's equivalent units for conversion costs for November are

- A. 3,400 units.
- B. 3,800 units.
- C. 4,000 units.
- D. 4,400 units.

- Answer (A) is **incorrect**. The units started and completed during November plus the 20% of work-in-process complete as to conversion costs equals 3,400 units (3,000 + 400).
- Answer (B) is **correct**. Given that BWIP (1,000 units) was already 60% complete, 400 equivalent units were needed for completion. In addition, 3,000 units were started and completed during the period. The 2,000 units in EWIP equal 400 equivalent units since they are 20% complete. Total equivalent units are 3,800 (400 + 3,000 + 400).
- Answer (C) is **incorrect**. The number of units started and completed in November and the units completed and transferred out from BI equals 4,000 units (3,000 + 1,000).
- Answer (D) is **incorrect**. The number of units started and completed in November, plus the units completed and transferred out from BI, plus the 20% of work-in-process complete as to conversion costs equals 4,400 units (3,000 + 1,000 + 400).

**[11] Gleim #: 2.2.20 -- Source: CMA 1286 4-16**

(Refers to Fact Pattern #1)

Using the weighted-average method, Levittown's equivalent units for direct materials for November are

- A. 3,400 units.
- B. 4,400 units.
- C. 5,000 units.
- D. 6,000 units.

- Answer (A) is **incorrect**. Units started and completed in November plus 20% of ending work-in-process equals 3,400 units ( $3,000 + 400$ ).
- Answer (B) is **incorrect**. The number of units started and completed in November plus units completed and transferred out from BI plus 20% of ending work-in-process equals 4,400 units ( $3,000 + 1,000 + 400$ ).
- Answer (C) is **incorrect**. The number of units started in November is 5,000.
- Answer (D) is **correct**. The difference between the weighted-average and FIFO methods of process costing is how BWIP is handled. FIFO makes a distinction between the costs in BWIP and the costs of goods started this period. Weighted average does not. Thus, when there is no BWIP, there is no difference between the two costing methods. Because 6,000 units have been started (1,000 BWIP + 5,000 started this period), and all materials are added at the beginning of the process, equivalent units for materials equal 6,000.

**[12] Gleim #: 2.2.21 -- Source: CMA 1286 4-17**

(Refers to Fact Pattern #1)

Using the weighted-average method, Levittown's equivalent units for conversion costs for November are

- A. 3,400 units.
- B. 3,800 units.
- C. 4,000 units.
- D. 4,400 units.

- Answer (A) is **incorrect**. The number of 3,400 units consist of the units started and completed in November plus the 20% of work-in-process complete as to conversion costs ( $3,000 + 400$ ).
- Answer (B) is **incorrect**. The number of 3,800 units equal the 400 units in BWIP needed for completion plus the units started and completed in November plus the 20% of work-in-process complete as to conversion costs ( $400 + 3,000 + 400$ ).
- Answer (C) is **incorrect**. The number of 4,000 units equal the units completed and transferred out from BI plus units started and completed during November ( $1,000 + 3,000$ ).
- Answer (D) is **correct**. Under the weighted-average method, work in the previous period on the beginning inventories is included along with the work added this period. Thus, the only difference between the FIFO calculations and the weighted-average calculation is the equivalent units for the beginning inventory. The 4,000 completed units (1,000 BWIP + 3,000 started this period) equal 4,000 equivalent units. The 2,000 units in EWIP are equivalent to 400 units ( $2,000 \text{ units} \times 20\% \text{ complete}$ ). Thus, there are 4,400 conversion cost equivalent units.

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**[Fact Pattern #2]**

Kimbeth Manufacturing uses a process cost system to manufacture Dust Density Sensors for the mining industry. The following information pertains to operations for the month of May.

	<u>Units</u>
Beginning work-in-process inventory, May 1	16,000
Started in production during May	100,000
Completed production during May	92,000
Ending work-in-process inventory, May 31	24,000

The beginning inventory was 60% complete for materials and 20% complete for conversion costs. The ending inventory was 90% complete for materials and 40% complete for conversion costs.

Costs pertaining to the month of May are as follows:

- Beginning inventory costs are materials, \$54,560; direct labor, \$20,320; and overhead, \$15,240.
- Costs incurred during May are materials used, \$468,000; direct labor, \$182,880; and overhead, \$391,160.

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**[23] Gleim #: 2.2.32 -- Source: CMA 695 3-1**

(Refers to Fact Pattern #2)

Using the first-in, first-out (FIFO) method, Kimbeth's equivalent units of production (EUP) for materials are

- A. 97,600 units.
- B. 104,000 units.
- C. 107,200 units.
- D. 108,000 units.

- Answer (A) is **incorrect**. This number of units omits the 6,400 EUP added to beginning work-in-process.



- Answer (B) is **correct**. Under FIFO, EUP are based solely on work performed during the current period. The EUP equals the sum of the work done on the beginning work-in-process inventory, units started and completed in the current period, and the ending work-in-process inventory. Given that beginning work-in-process was 60% complete as to materials, the current period is charged for 6,400 EUP ( $16,000 \text{ units} \times 40\%$ ). Because 92,000 units were completed during the period, 76,000 ( $92,000 - 16,000 \text{ in BWIP}$ ) must have been started and completed during the period. They represent 76,000 EUP. Finally, the EUP for ending work-in-process equal 21,600 ( $24,000 \text{ units} \times 90\%$ ). Thus, total EUP for May are 104,000 ( $6,400 + 76,000 + 21,600$ ).
- Answer (C) is **incorrect**. This number of units assumes beginning work-in-process was 40% complete.
- Answer (D) is **incorrect**. This number of units equals the sum of the physical units in beginning work-in-process and the physical units completed.

**[24] Gleim #: 2.2.33 -- Source: CMA 695 3-2**

(Refers to Fact Pattern #2)

Using the FIFO method, Kimbeth's equivalent units of production for conversion costs are

- A. 85,600 units.
- B. 88,800 units.
- C. 95,200 units.
- D. 98,400 units.

- Answer (A) is **incorrect**. This number of units omits the work done on beginning work-in-process.
- Answer (B) is **incorrect**. This number of units omits the work done on ending work-in-process.
- Answer (C) is **incorrect**. This number of units assumes the beginning work-in-process was 40% complete as to conversion costs.
- Answer (D) is **correct**. The beginning inventory was 20% complete as to conversion costs. Hence, 12,800 EUP ( $16,000 \text{ units} \times 80\%$ ) were required for completion. EUP for units started and completed equaled 76,000 [ $(92,000 \text{ completed units} - 16,000 \text{ units in BWIP}) \times 100\%$ ]. The work done on ending work-in-process totaled 9,600 EUP ( $24,000 \text{ units} \times 40\%$ ). Thus, total EUP for May are 98,400 ( $12,800 + 76,000 + 9,600$ ).

[25] Gleim #: 2.2.34 -- Source: CMA 695 3-3

(Refers to Fact Pattern #2)

Using the FIFO method, Kimbeth's equivalent unit cost of materials for May is

- A. \$4.12
- B. \$4.50
- C. \$4.60
- D. \$4.80

- Answer (A) is **incorrect**. The amount of \$4.12 is based on EUP calculated under the weighted-average method.
- Answer (B) is **correct**. Under the FIFO method, EUP for materials equal 104,000  $[(16,000 \text{ units in BWIP} \times 40\%) + (76,000 \text{ units started and completed} \times 100\%) + (24,000 \text{ units in EWIP} \times 90\%)]$ . Consequently, the equivalent unit cost of materials is \$4.50 (\$468,000 total materials cost in May  $\div$  104,000 EUP).
- Answer (C) is **incorrect**. The amount of \$4.60 is the weighted-average cost per equivalent unit.
- Answer (D) is **incorrect**. The amount of \$4.80 omits the 6,400 EUP added to beginning work-in-process.

[26] Gleim #: 2.2.35 -- Source: CMA 695 3-4

(Refers to Fact Pattern #2)

Using the FIFO method, Kimbeth's equivalent unit conversion cost for May is

- A. \$5.65
- B. \$5.83
- C. \$6.00
- D. \$6.20

- Answer (A) is **incorrect**. The amount of \$5.65 is based on EUP calculated under the weighted-average method.
- Answer (B) is **correct**. Under the FIFO method, EUP for conversion costs equal 98,400  $[(16,000 \text{ units in BWIP} \times 80\%) + (76,000 \text{ units started and completed} \times 100\%) + (24,000 \text{ units in EWIP} \times 40\%)]$ . Conversion costs incurred during the current period equal \$574,040 (\$182,880 DL + \$391,160 FOH). Hence, the equivalent unit cost for conversion costs is \$5.83 (\$574,040  $\div$  98,400).
- Answer (C) is **incorrect**. The amount of \$6.00 is the cost per equivalent unit calculated under the weighted-average method.

- Answer (D) is **incorrect**. The amount of \$6.20 results from combining conversion costs for May with those in beginning work-in-process and dividing by 98,400 EUP.

**[27] Gleim #: 2.2.36 -- Source: CMA 695 3-5**

(Refers to Fact Pattern #2)

Using the FIFO method, Kimbeth's total cost of units in the ending work-in-process inventory at May 31 is

- A. \$153,168
- B. \$154,800
- C. \$155,328
- D. \$156,960

- Answer (A) is **correct**. The FIFO costs per equivalent unit for materials and conversion costs are \$4.50 and \$5.83, respectively. EUP for materials in ending work-in-process equal 21,600 ( $24,000 \times 90\%$ ). Thus, total FIFO materials cost is \$97,200 ( $21,600 \text{ EUP} \times \$4.50$ ). EUP for conversion costs in ending work-in-process equal 9,600 ( $24,000 \times 40\%$ ). Total conversion costs are therefore \$55,968 ( $9,600 \text{ EUP} \times \$5.83$ ). Consequently, total work-in-process costs are \$153,168 ( $\$97,200 + \$55,968$ ).
- Answer (B) is **incorrect**. The amount of \$154,800 is based on a FIFO calculation for materials and a weighted-average calculation for conversion costs.
- Answer (C) is **incorrect**. The amount of \$155,328 is based on a weighted-average calculation for materials and a FIFO calculation for conversion costs.
- Answer (D) is **incorrect**. The amount of \$156,960 is the weighted-average cost of ending work-in-process.

**[28] Gleim #: 2.2.37 -- Source: CMA 695 3-6**

(Refers to Fact Pattern #2)

Using the weighted-average method, Kimbeth's equivalent unit cost of materials for May is

- A. \$4.12
- B. \$4.50
- C. \$4.60
- D. \$5.02

- Answer (A) is **incorrect**. The amount of \$4.12 equals materials costs for May divided by weighted-average EUP.

- Answer (B) is **incorrect**. The amount of \$4.50 is the equivalent unit cost based on the FIFO method.
- Answer (C) is **correct**. The weighted-average method averages the work done in the prior period with the work done in the current period. There are two layers of units to analyze: those completed during the period, and those still in ending inventory. The units completed totaled 92,000. The 24,000 ending units are 90% complete as to materials, so EUP equal 21,600. Hence, total EUP for materials are 113,600 (92,000 + 21,600). The total materials costs incurred during the period and accumulated in beginning work-in-process is \$522,560 (\$468,000 + \$54,560). Thus, weighted-average unit cost is \$4.60 (\$522,560 ÷ 113,600 EUP).
- Answer (D) is **incorrect**. The amount of \$5.02 is based on a FIFO calculation of equivalent units and a weighted-average calculation of costs.

**[29] Gleim #: 2.2.38 -- Source: CMA 695 3-7**

(Refers to Fact Pattern #2)

Using the weighted-average method, Kimbeth's equivalent unit conversion cost for May is

- A. \$5.65
- B. \$5.83
- C. \$6.00
- D. \$6.20

- Answer (A) is **incorrect**. The amount of \$5.65 omits the conversion costs in beginning work-in-process.
- Answer (B) is **incorrect**. The amount of \$5.83 is the equivalent unit conversion cost based on FIFO.
- Answer (C) is **correct**. The weighted-average method does not distinguish between the work done in the prior period and the work done in the current period. Accordingly, the 92,000 completed units represent 92,000 weighted-average EUP. The 24,000 units in ending work-in-process are 40% complete as to conversion costs, so they equal 9,600 EUP. Hence, total EUP for conversion costs are 101,600 (92,000 + 9,600). The sum of the conversion costs accumulated in beginning work-in-process and incurred during the period is \$609,600 (\$20,320 + \$15,240 + \$182,880 + \$391,160). Thus, weighted-average unit cost is \$6.00 (\$609,600 ÷ 101,600 EUP).
- Answer (D) is **incorrect**. The amount of \$6.20 is based on a FIFO calculation of equivalent units and a weighted-average calculation of costs.

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**[Fact Pattern #3]**

Goggle-eyed Old Snapping Turtle, a sporting goods manufacturer, buys wood as a direct material for baseball bats. The Forming Department processes the baseball bats, and the bats are then transferred to the Finishing Department where a sealant is applied. The Forming Department began manufacturing 10,000 “Casey Sluggers” during the month of May. There was no beginning inventory.

Costs for the Forming Department for the month of May were as follows:

Direct materials	\$33,000
Conversion costs	<u>17,000</u>
Total	<u>\$50,000</u>

A total of 8,000 bats were completed and transferred to the Finishing Department; the remaining 2,000 bats were still in the forming process at the end of the month. All of the Forming Department’s direct materials were placed in process, but, on average, only 25% of the conversion cost was applied to the ending work-in-process inventory.

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**[30] Gleim #: 2.2.39 -- Source: CMA 696 3-3**

(Refers to Fact Pattern #3)

The cost of the units transferred to Snapping Turtle’s Finishing Department is

- A. \$50,000
- B. \$40,000
- C. \$53,000
- D. \$42,400

- Answer (A) is **incorrect**. A portion of the total costs is still in work-in-process.
- Answer (B) is **incorrect**. The amount of \$40,000 assumes that work-in-process is 100% complete as to conversion costs.
- Answer (C) is **incorrect**. The amount of \$53,000 exceeds the actual costs incurred during the period. Given no beginning inventory, the amount transferred out cannot exceed the costs incurred during the period.

- Answer (D) is **correct**. The total equivalent units for raw materials equals 10,000 because all materials for the ending work-in-process had already been added to production. Hence, the materials cost per unit was \$3.30 ( $\$33,000 \div 10,000$ ). For conversion costs, the total equivalent units equals 8,500 [8,000 completed + (2,000 in EWIP  $\times$  25%)]. Thus, the conversion cost was \$2.00 per unit ( $\$17,000 \div 8,500$ ). The total cost transferred was therefore \$42,400 [8,000 units  $\times$  ( $\$3.30 + \$2.00$ )].

**[31] Gleim #: 2.2.40 -- Source: CMA 696 3-4**

(Refers to Fact Pattern #3)

The cost of the work-in-process inventory in Snapping Turtle's Forming Department at the end of May is

- A. \$10,000
- B. \$2,500
- C. \$20,000
- D. \$7,600

- Answer (A) is **incorrect**. The amount of \$10,000 assumes that work-in-process inventory is 100% complete as to conversion costs.
- Answer (B) is **incorrect**. The amount of \$2,500 assumes that work-in-process inventory is 100% complete as to conversion costs and that 500 bats are in inventory.
- Answer (C) is **incorrect**. The amount of \$20,000 assumes that work-in-process is 100% complete as to conversion costs and that 6,000 units were transferred out.
- Answer (D) is **correct**. The equivalent units for raw materials would be 10,000 (8,000 + 2,000) since the work-in-process is 100% complete as to materials. Therefore, dividing the \$33,000 by 10,000 units results in a unit cost for materials of \$3.30. The equivalent units for conversion costs would be 8,500 units [8,000 + (2,000 units  $\times$  .25)]. Dividing the \$17,000 of conversion costs by 8,500 equivalent units results in a unit cost of \$2 per bat. Therefore, the total cost of goods transferred out would be \$5.30, consisting of \$3.30 for materials and \$2 for conversion costs. Multiplying \$5.30 times the 8,000 bats completed results in a total transfer of \$42,400. Consequently, the cost of the ending work-in-process must have been \$7,600 (\$50,000 total costs incurred – \$42,400).

**[34] Gleim #: 2.2.43 -- Source: CMA 690 4-10**

During the month of May, Mercer Company completed 50,000 units costing \$600,000, exclusive of spoilage allocation. Of these completed units, 25,000 were sold during the month. An additional 10,000 units, costing \$80,000, were 50% complete at May 31. All units are inspected between the completion of manufacturing and transfer to finished goods inventory. Normal spoilage for the month was \$20,000, and abnormal spoilage of \$50,000 was also incurred during the month. The portion of total spoilage that should be charged against revenue in May is

- A. \$50,000
- B. \$20,000
- C. \$70,000
- D. \$60,000

- Answer (A) is **incorrect**. The amount of \$50,000 is abnormal spoilage.
- Answer (B) is **incorrect**. The amount of \$20,000 equals normal spoilage for the month.
- Answer (C) is **incorrect**. The amount of \$70,000 is the sum of normal spoilage and abnormal spoilage.
- Answer (D) is **correct**. Normal spoilage is an inventoriable cost of production that is charged to cost of goods sold when the units are sold. Abnormal spoilage is a period cost recognized when incurred. The \$50,000 of abnormal spoilage is therefore expensed during May. In addition, 50% of the normal spoilage is debited to cost of goods sold because 50% ( $25,000 \div 50,000$ ) of the units completed were sold during the period. No spoilage is allocated to work-in-process because inspection occurs after completion. Thus, the normal spoilage expensed during the month is \$10,000 ( $\$20,000 \times 50\%$ ). Total spoilage charged against revenue is \$60,000 ( $\$50,000 + \$10,000$ ).

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**[Fact Pattern #4]**

Marlan Manufacturing produces a product that passes through two departments. The units from the molding department are completed in the assembly department. The units are completed in assembly by adding the remaining direct materials when the units are 60% complete with respect to conversion costs. Conversion costs are added proportionately in assembly. The production activity in the assembly department for the current month is presented as follows. Marlan uses the FIFO (first-in, first-out) inventory method in its process cost system.

Beginning inventory units (25% complete with respect to conversion costs)	8,000
Units transferred in from the molding department during the month	<u>42,000</u>
Units to account for	<u><u>50,000</u></u>
Units completed and transferred to finished goods inventory	38,000
Ending inventory units (40% complete with respect to conversion costs)	<u>12,000</u>
Units accounted for	<u><u>50,000</u></u>

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**[36] Gleim #: 2.2.45 -- Source: CMA 692 3-2**

(Refers to Fact Pattern #4)

The equivalent units transferred from Marlan's molding department to the assembly department for the current month are

- A. 30,000 units.
  - B. 38,000 units.
  - C. 40,800 units.
  - D. 42,000 units.
- Answer (A) is **incorrect**. The number of units started and completed during the period was 30,000.
  - Answer (B) is **incorrect**. The number of units transferred out, not to, the assembly department was 38,000.
  - Answer (C) is **incorrect**. The equivalent units for conversion costs equals 40,800.
  - Answer (D) is **correct**. This problem seemingly asks a technical question, but in reality was designed to test the candidate's alertness. The equivalent units transferred from the molding department are simply the total units transferred from the molding department (42,000 units).



**[37] Gleim #: 2.2.46 -- Source: CMA 692 3-4**

(Refers to Fact Pattern #4)

The equivalent units in Marlan's assembly department for conversion costs for the current month are

- A. 34,800 units.
- B. 40,800 units.
- C. 42,800 units.
- D. 43,200 units.

- Answer (A) is **incorrect**. The number of 34,800 units assumes the beginning inventory was 100% complete.
- Answer (B) is **correct**. The equivalent units for conversion costs equal total units to account for, minus work done on beginning inventory, minus work not done on ending inventory. Hence, the equivalent units for conversion costs equal 40,800 units  $[50,000 \text{ units} - (25\% \times 8,000 \text{ units}) - (60\% \times 12,000 \text{ units})]$ .
- Answer (C) is **incorrect**. Conversion-cost EUP based on the weighted-average method is 42,800 units.
- Answer (D) is **incorrect**. The ending inventory was 40% complete, resulting in subtracting 60%, not 40%, of the 12,000 items in ending inventory to determine work not on ending inventory.

**[38] Gleim #: 2.2.47 -- Source: CMA 692 3-3**

(Refers to Fact Pattern #4)

The equivalent units in Marlan's assembly department for direct materials for the current month are

- A. 30,000 units.
- B. 38,000 units.
- C. 40,800 units.
- D. 42,000 units.

- Answer (A) is **incorrect**. The number of 30,000 units ignores the 8,000 units in process at the beginning of the period.

- Answer (B) is **correct**. Direct materials are added when the units are 60% complete as to conversion costs. The beginning inventory of 8,000 units was only 25% complete at the start of the period, and 42,000 units were transferred in. Given that the ending inventory of 12,000 units was only 40% complete, neither beginning nor ending inventory had received direct materials in the assembly department. Accordingly, the equivalent units in the assembly department for direct materials must have been 38,000 units (8,000 units BI + 42,000 units transferred in – 12,000 units EI).
- Answer (C) is **incorrect**. Equivalent units for conversion costs, not direct materials, is 40,800.
- Answer (D) is **incorrect**. The 42,000 units were transferred in during the month. Not all received an input of direct materials.

**[39] Gleim #: 2.2.48 -- Source: CMA 0408 2-356**

A major advantage of the first-in, first-out (FIFO) process-costing method over the weighted-average process-costing method is

- A. The simplicity of the FIFO method.
  - B. That inventories are eliminated from consideration in the FIFO method.
  - C. That current-period cost per unit is highlighted under the FIFO method.
  - D. That only ending inventory costs need to be separately computed when using the FIFO method.
- Answer (A) is **incorrect**. FIFO process costing is no simpler than weighted-average process costing.
  - Answer (B) is **incorrect**. Elimination of inventories is a feature of backflush, not process, costing.
  - Answer (C) is **correct**. First-in, first-out (FIFO) process costing involves backing out beginning inventory costs when computing work performed. This has the effect of highlighting the most recent costs.
  - Answer (D) is **incorrect**. Beginning inventory costs must be separately computed so they can be backed out.

**[40] Gleim #: 2.2.49 -- Source: CMA 0408 2-126**

Mack, Inc., uses a weighted-average process costing system. Direct materials and conversion costs are incurred evenly during the production process. During the month of October, the following costs were incurred:

Direct materials	\$39,700
Conversion costs	70,000

The work-in-process inventory as of October 1 consisted of 5,000 units, valued at \$4,300, that were 20% complete. During October, 27,000 units were transferred out. Inventory as of October 31 consisted of 3,000 units that were 50% complete. The weighted-average inventory cost per unit completed in October was

- A. \$3.51
- B. \$3.88
- C. \$3.99
- D. \$4.00

- Answer (A) is **incorrect**. The amount of \$3.51 results from including 80% of the 5,000 units in beginning work-in-process (4,000) to the EUP for October.
- Answer (B) is **incorrect**. The amount of \$3.88 results from including 20% of the beginning work-in-process (\$860) to the total cost to be distributed.
- Answer (C) is **incorrect**. The amount of \$3.99 is the per-unit cost on the FIFO basis.
- Answer (D) is **correct**. In determining Mack's weighted-average cost per unit, the first step is to calculate the equivalent units of production (EUP). The same EUP amount can be used for both materials and conversion:

Transferred out (27,000 units × 100%)	27,000
Ending work-in-process (3,000 units × 50%)	<u>1,500</u>
Total	<u><u>28,500</u></u>

Total costs to be distributed are calculated as follows:

Embedded in beginning work-in-process	\$ 4,300
Current month -- direct materials	39,700
Current month -- conversion costs	<u>70,000</u>
Total	<u><u>\$114,000</u></u>

The total cost per unit is thus \$4.00 (\$114,000 ÷ 28,500).

**[Fact Pattern #5]**

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner:

Production Flow	Physical Units
Completed and transferred to the next department	100
Add: ending work-in-process inventory	10 (40% complete as to conversion)
	<u>          </u>
Total units to account for	110
Less: beginning work-in-process inventory	(20) (60% complete as to conversion)
	<u>          </u>
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method.

**[41] Gleim #: 2.2.50 -- Source: CMA 0408 2-127**

(Refers to Fact Pattern #5)

Under the weighted-average method, Krause's total raw material costs in the ending work-in-process inventory for December is

- A. \$120
- B. \$72
- C. \$60
- D. \$36

- Answer (A) is **incorrect**. The amount of \$120 is the total materials costs embedded in beginning work-in-process.
- Answer (B) is **incorrect**. The amount of \$72 results from improperly multiplying the \$120 beginning work-in-process materials costs by the 60% completion percentage for conversion.

- Answer (C) is **correct**. All materials are added at the beginning of this department, meaning that all units are 100% complete for purposes of materials immediately upon entering this department. The equivalent units of production (EUP) for materials for units transferred out is therefore 100 (100 units  $\times$  100%). Under the weighted-average method, the EUP of ending work-in-process must also be included. This number is 10 (10 units  $\times$  100%), which, added to the 100 transferred out, makes a total weighted-average EUP of 110. The numerator of the per-unit cost calculation must likewise contain both costs embedded in beginning work-in-process (\$120) and those added during the month (\$540), for a total of \$660. The weighted-average per-unit cost is therefore \$6.00 (\$660  $\div$  110).
- Answer (D) is **incorrect**. The amount of \$36 results from improperly taking one-third of the \$120 embedded in beginning work-in-process.

**[42] Gleim #: 2.2.51 -- Source: CMA 0408 2-136**

(Refers to Fact Pattern #5)

Under the weighted-average method, Krause's total conversion cost assigned to units transferred to the next department in December was

- A. \$1,664
- B. \$1,600
- C. \$1,513
- D. \$1,484

- Answer (A) is **incorrect**. The amount of \$1,644 is the total value of all units for the month, not just transferred out.
- Answer (B) is **correct**. Units transferred out of a department are by definition 100% complete for purposes of conversion costs for that department. The equivalent units of production (EUP) for conversion for units transferred out is therefore 100 (100 units  $\times$  100%). Under the weighted-average method, the EUP of ending work-in-process must also be included. This number is 4 (10 units  $\times$  40%), which, added to the 100 transferred out, makes a total weighted-average EUP of 104. Under the weighted-average method, the numerator of the per-unit cost calculation must contain both costs embedded in beginning work-in-process (\$180) and those added during the month (\$1,484), for a total of \$1,664. The weighted-average per-unit cost is therefore \$16.00 (\$1,664  $\div$  104). The 100 EUP transferred out times the \$16.00 unit cost equals \$1,600 total under the weighted-average method.
- Answer (C) is **incorrect**. The amount of \$1,513 includes all of the ending work-in-process rather than the percentage completed
- Answer (D) is **incorrect**. The amount of \$1,484 is the value of only costs added during the month.

**[43] Gleim #: 2.2.52 -- Source: CMA 0408 2-137**

(Refers to Fact Pattern #5)

Under the first-in, first-out (FIFO) method, Krause's equivalent units of production used to calculate conversion costs for December was

- A. 110 units.
- B. 104 units.
- C. 100 units.
- D. 92 units.

- Answer (A) is **incorrect**. The EUP for materials is 110 units.
- Answer (B) is **incorrect**. The EUP using the weighted-average method is 104 units.
- Answer (C) is **incorrect**. The number of units transferred out is 100 units.
- Answer (D) is **correct**. Units transferred out of a department are by definition 100% complete for purposes of conversion costs for that department. The equivalent units of production (EUP) for conversion for units transferred out is therefore 100 (100 units  $\times$  100%). Under the FIFO method, the EUP of ending work-in-process must also be included. This number is 4 (10 units  $\times$  40%), which, added to the 100 transferred out, gives an EUP of 104. This is the EUP that would be used under the weighted-average method, but for FIFO beginning work-in-process must be taken out. For conversion, this is 12 units (20 units  $\times$  60%), making a total FIFO-basis EUP for the month of 92 (104 – 12).

**[44] Gleim #: 2.2.53 -- Source: CMA 0408 2-130**

A company that uses a process costing system inspects its goods at the 60% stage of completion. If the firm's ending work-in-process inventory is 80% complete, how would the firm account for its normal and abnormal spoilage?

- A. Both normal and abnormal spoilage costs would be added to the cost of the good units completed during the period.
- B. Both normal and abnormal spoilage costs would be written off as an expense of the period.
- C. Normal spoilage costs would be added to the cost of the good units completed during the period; in contrast, abnormal spoilage costs would be written off as a loss.
- D. Normal spoilage costs would be allocated between the cost of good units completed during the period and the ending work-in-process inventory. In contrast, abnormal spoilage costs would be written off as a loss.

- Answer (A) is **incorrect**. Under process costing, as with job-order costing, the cost of a normal level of spoilage is left in cost of goods sold; abnormal spoilage is recognized separately as a loss.
- Answer (B) is **incorrect**. Under process costing, as with job-order costing, the cost of a normal level of spoilage is left in cost of goods sold; abnormal spoilage is recognized separately as a loss.
- Answer (C) is **incorrect**. The cost of the period's normal spoilage must be allocated among all the units worked on during the period, both those finished and those remaining in work-in-process.
- Answer (D) is **correct**. Under process costing, as with job-order costing, the cost of a normal level of spoilage is left in cost of goods sold. Thus, the cost of the period's normal spoilage must be allocated among all the units worked on during the period, both those finished and those remaining in work-in-process. Abnormal spoilage is recognized separately as a loss.

**[45] Gleim #: 2.2.54 -- Source: CMA 0408 2-131**

When considering normal and abnormal spoilage, which one of the following is theoretically the best accounting method for spoilage in a process-costing system?

- A. Both normal and abnormal spoilage cost should be charged to a separate expense account.
  - B. Normal spoilage cost should be charged to good units and abnormal spoilage cost should be charged to a separate expense account.
  - C. Both normal and abnormal spoilage costs should be charged to good units.
  - D. Normal spoilage costs should be charged to a separate expense account and abnormal spoilage cost should be charged to good units.
- 
- Answer (A) is **incorrect**. The cost of a normal level of spoilage is left in cost of goods sold.
  - Answer (B) is **correct**. Under process costing, as with job-order costing, the cost of a normal level of spoilage is left in cost of goods sold; abnormal spoilage is recognized separately as a loss.
  - Answer (C) is **incorrect**. Abnormal spoilage is recognized separately as a loss.
  - Answer (D) is **incorrect**. The best accounting method is the opposite (normal spoilage charged to good units, abnormal spoilage charged to a separate expense account).

**[46] Gleim #: 2.2.55 -- Source: CMA 0408 2-132**

Southwood Industries uses a process-costing system and inspects its goods at the end of manufacturing. The inspection as of June 30 revealed the following information for the month of June:

Good units completed	16,000
Normal spoilage (units)	300
Abnormal spoilage (units)	100

Unit costs were: materials, \$3.50 and conversion costs, \$6.00. The number of units that Southwood would transfer to its finished goods inventory and the related cost of these units are

	<u>Units Transferred</u>	<u>Cost</u>
A.	16,000	\$152,000
B.	16,000	\$154,850
C.	16,000	\$155,800
D.	16,300	\$154,850

- Answer (A) is **incorrect**. The amount of \$152,000 results from failing to include normal spoilage.
- Answer (B) is **correct**. Only salable goods (16,000) are transferred to finished goods inventory. Under process costing, the full cost of normal spoilage is borne by good units. Thus, the total dollar amount transferred to finished goods was \$154,800  $[(16,000 + 300) \times \$9.50]$ .
- Answer (C) is **incorrect**. The amount of \$155,800 results from improperly including abnormal spoilage.
- Answer (D) is **incorrect**. The figure 16,300 results from improperly including spoiled goods in the quantity transferred to finished goods.



[47] Gleim #: 2.2.56 -- Source: CMA 0408 2-133

Colt Company uses a first-in, first-out (FIFO) process cost system to account for the cost of producing a chemical compound. As part of production, Material B is added when the goods are 80% complete. Beginning work-in-process inventory for the current month was 20,000 units, 90% complete. During the month, 70,000 units were started in process, and 65,000 of these units were completed. There were no lost or spoiled units. If the ending inventory was 60% complete, the total equivalent units for Material B for the month was

- A. 65,000 units.
- B. 70,000 units.
- C. 85,000 units.
- D. 90,000 units.

- Answer (A) is **correct**. Beginning work-in-process, being 90% complete, already had Material B added, so it is not counted in the EUP calculation for Material B for the month. By the same token, ending work-in-process, being only 60% complete, had not yet had Material B added, and thus it is also not counted in the EUP calculation for Material B. The EUP for Material B is therefore only the 65,000 units started and completed during the month.
- Answer (B) is **incorrect**. The figure 70,000 is the number of units started during the month.
- Answer (C) is **incorrect**. The figure 85,000 results from improperly including the 20,000 units from beginning work-in-process inventory.
- Answer (D) is **incorrect**. The figure 90,000 is the total units to account for.

**[48] Gleim #: 2.2.57 -- Source: CMA 0408 2-134**

Oster Manufacturing uses a weighted-average process costing system and has the following costs and activity during October:

Materials	\$40,000
Conversion cost	<u>32,500</u>
Total beginning work-in-process inventory	<u><u>\$72,500</u></u>
Materials	\$ 700,000
Conversion cost	<u>617,500</u>
Total production costs -- October	<u><u>\$1,317,500</u></u>

Production completed	60,000 units
Work-in-process, October 31	20,000 units

All materials are introduced at the start of the manufacturing process, and conversion cost is incurred uniformly throughout production. Conversations with plant personnel reveal that, on average, month-end in-process inventory is 25% complete. Assuming no spoilage, how should Oster's October manufacturing cost be assigned?

	<u>Production Completed</u>	<u>Work-in- Process</u>
A.	\$1,042,500	\$347,500
B.	\$1,095,000	\$222,500
C.	\$1,155,000	\$235,000
D.	\$1,283,077	\$106,923

- Answer (A) is **incorrect**. This combination is based on using total work-in-process units rather than the 5,000 equivalent units.
- Answer (B) is **incorrect**. This combination does not include beginning work-in-process costs for calculation of EUP.

- Answer (C) is **correct**. When determining unit costs under weighted-average, the numerator consists both of costs that were added in prior periods and those added during the current period. Likewise, the denominator consists both of units completed during the period and the equivalent units of production (EUP) of those remaining in ending work-in-process. Since materials are added at the beginning of the process, both production populations are 100% complete with respect to materials costs:

EUP calculations for material costs:

Production completed	$60,000 \times 100\% = 60,000$
Work-in-process	$20,000 \times 100\% = 20,000$

EUP for conversion costs is calculated as follows:

EUP calculations for conversion costs:

Production completed	$60,000 \times 100\% = 60,000$
Work-in-process	$20,000 \times 25\% = 5,000$

For October, therefore, Oster's unit cost calculations are as follows:

Unit cost calculations for materials:

$$\frac{\$40,000 + \$700,000}{60,000 + 20,000} = \$9.25 \text{ per EU}$$

Unit cost calculations for conversion:

$$\frac{\$32,500 + \$617,500}{60,000 + 5,000} = \$10.00 \text{ per EU}$$

The value of production completed in October is therefore  $[(60,000 \text{ units} \times \$9.25) + (60,000 \text{ units} \times \$10.00) = \$1,155,000]$ , and the value of ending work-in-process is  $[(20,000 \text{ units} \times \$9.25) + (5,000 \text{ units} \times \$10.00) = \$235,000]$ .

- Answer (D) is **incorrect**. This combination uses the percentage of ending work-in-process completed for the cost per equivalent unit calculation of material costs. Materials were added at the beginning of the process, so they were 100% complete as to materials.

**[49] Gleim #: 2.2.58 -- Source: CMA 0408 2-135**

San Jose, Inc., uses a weighted-average process costing system. All materials are introduced at the start of manufacturing, and conversion cost is incurred evenly throughout production. The company started 70,000 units during May and had the following work-in-process inventories at the beginning and end of the month:

May 1      30,000 units, 40% complete  
May 31      24,000 units, 25% complete

Assuming no spoilage or defective units, the total equivalent units used to assign costs for May are

	<u>Materials</u>	<u>Conversion Cost</u>
A.	70,000	70,000
B.	82,000	82,000
C.	100,000	70,000
D.	100,000	82,000

- Answer (A) is **incorrect**. The figure 70,000 results from accounting for only the units started during the month.
- Answer (B) is **incorrect**. The figure 82,000 results from improperly applying the 25% completion percentage to materials as well as conversion.
- Answer (C) is **incorrect**. The figure 70,000 for conversion results from accounting for only the units started during the month and failing to weight the units in ending work-in-process inventory.
- Answer (D) is **correct**. San Jose had 30,000 units in beginning work-in-process inventory and started 70,000 during the month, for a total of 100,000 units to be accounted for. Since all materials are introduced at the start of manufacturing, all 100,000 units are 100% complete with respect to materials costs. Equivalent units of production for conversion costs can be determined as follows:

Beginning WIP	30,000	units × 100% =	30,000
Started and completed	46,000	units × 100% =	46,000
Ending WIP	<u>24,000</u>	units × 25% =	<u>6,000</u>
Totals	<u>100,000</u>	units	<u>82,000</u>

**[50] Gleim #: 2.2.59 -- Source: CMA 0408 2-138**

Jones Corporation uses a first-in, first-out (FIFO) process costing system. Jones has the following unit information for the month of August:

	<u>Units</u>
Beginning work-in-process inventory:	
100% complete for materials,	
75% complete for conversion cost	10,000
Units complete and transferred out	90,000
Ending work-in-process inventory:	
100% complete for materials,	
60% complete for conversion costs	8,000

The number of equivalent units of production for conversion costs for the month of August is

- A. 87,300
- B. 88,000
- C. 92,300
- D. 92,700

- Answer (A) is **correct**. Jones had 8,000 units in ending work-in-process inventory and transferred out 90,000 during the month, for a total of 98,000 units to be accounted for. Since Jones completed 90,000 units during the month and had 10,000 in beginning work-in-process, 80,000 of those completed were started during the month. Under a FIFO system, only the work necessary to complete units in beginning inventory is counted toward equivalent units of production (EUP). Jones's EUP can be determined as follows:

Beginning WIP	10,000	units × 25% =	2,500
Started and completed	80,000	units × 100% =	80,000
Ending WIP	<u>8,000</u>	units × 60% =	<u>4,800</u>
Totals	<u>98,000</u>	units	<u>87,300</u>

- Answer (B) is **incorrect**. The figure 88,000 is the number of units started during the month.
- Answer (C) is **incorrect**. The figure 92,300 results from weighting beginning work-in-process for the completion percentage rather than the percentage needed to complete.
- Answer (D) is **incorrect**. The figure 87,300 is the EUP using the FIFO method.

**[51] Gleim #: 2.2.60 -- Source: CMA 0408 2-139**

Waller Co. uses a weighted-average process-costing system. Material B is added at two different points in the production of shirms, 40% is added when the units are 20% completed, and the remaining 60% of Material B is added when the units are 80% completed. At the end of the quarter, there are 22,000 shirms in process, all of which are 50% completed. With respect to Material B, the ending shirms in process represent how many equivalent units?

- A. 4,400
- B. 8,800
- C. 11,000
- D. 22,000

- Answer (A) is **incorrect**. The figure 4,400 results from multiplying by the 20% completion stage rather than the 40% material usage.
- Answer (B) is **correct**. All 22,000 units in ending work-in-process have had 40% of Material B added, since they have all passed the 20% completion point and none have reached the 80% completion point. Equivalent units of production for Material B are thus 8,800 ( $22,000 \times 40\%$ ).
- Answer (C) is **incorrect**. The figure 11,000 results from multiplying by the 50% completion stage rather than the 40% material usage.
- Answer (D) is **incorrect**. The figure 22,000 results from treating all the units in ending work-in-process as being complete for materials.

[1] Gleim #: 2.3.61 -- Source: CMA 0408 2-146

A profitable company with five departments uses plantwide overhead rates for its highly diversified operation. The firm is studying a change to either allocating overhead by using departmental rates or using activity-based costing (ABC). Which one of these two methods will likely result in the use of a greater number of cost allocation bases and more accurate costing results?

	<u>Greater Number of Allocation Bases</u>	<u>More Accurate Costing Results</u>
A.	Departmental	Departmental
B.	Departmental	ABC
C.	ABC	Departmental
D.	ABC	ABC

- Answer (A) is **incorrect**. ABC leads to both more allocation bases than departmental overhead rates and to more accurate costing results.
- Answer (B) is **incorrect**. While departmental overhead rates lead to more allocation bases than does a single plantwide rate, ABC involves many more allocation bases.
- Answer (C) is **incorrect**. While departmental overhead rates lead to more accurate costing than a single plantwide rate, ABC leads to even more accurate costing.
- Answer (D) is **correct**. Under activity-based costing (ABC), the number of allocation bases increases dramatically over those of a traditional (volume-based) costing accumulation system. First, every activity must be allocated to an indirect cost pool using resource drivers ("1st-stage allocations"), and every indirect cost pool must be allocated to final products using activity drivers ("2nd-stage allocations"). This use of a larger number of allocation pools and bases leads to more accurate costing results.

**[2] Gleim #: 2.3.62 -- Source: CMA 0408 2-147**

Young Company is beginning operations and is considering three alternative ways in which to allocate manufacturing overhead to individual units produced. Young can use a plantwide rate, departmental rates, or activity-based costing. Young will produce many types of products in its single plant, and not all products will be processed through all departments. In which one of the following independent situations would reported net income for the first year be the same regardless of which overhead allocation method had been selected?

- A. All production costs approach those costs that were budgeted.
  - B. The sales mix does not vary from the mix that was budgeted.
  - C. All manufacturing overhead is a fixed cost.
  - D. All ending inventory balances are zero.
- Answer (A) is **incorrect**. Accurate budgeting has no bearing on the net income figure produced by various costing systems.
  - Answer (B) is **incorrect**. A zero variance in the sales mix is not the only factor bearing on net income.
  - Answer (C) is **incorrect**. The behavior of overhead is not the only factor bearing on net income.
  - Answer (D) is **correct**. When there is no beginning finished goods inventory, the only difference in net income arising from the use of variant costing methods is the treatment of costs that show up on the balance sheet because they are buried in the various ending inventories. In Young's case, therefore, an identical net income figure across the three different costing system options can only be guaranteed when there are no ending inventories.

**[8] Gleim #: 2.3.68 -- Source: CMA 696 3-16**

The series of activities in which customer usefulness is added to the product is the definition of

- A. A value chain.
- B. Process value analysis.
- C. Integrated manufacturing.
- D. Activity-based costing.



- Answer (A) is **correct**. Value-chain analysis for assessing competitive advantage is an integral part of the strategic planning process. Value-chain analysis is a continuous process of gathering, evaluating, and communicating information for business decision making. A value chain depicts how customer value accumulates along a chain of activities that lead to an end product or service. A value chain consists of the activities required to research and develop, design, produce, market, deliver, and support its product. Extended value-chain analysis expands the view of the parties involved to include those upstream (e.g., suppliers) and downstream (e.g., customers).
- Answer (B) is **incorrect**. Process value analysis relates to a single process.
- Answer (C) is **incorrect**. Computer-integrated manufacturing uses computers to control all aspects of manufacturing in a single location.
- Answer (D) is **incorrect**. Activity-based costing identifies the activities associated with cost incurrence and the drivers of those activities. Costs are then assigned to cost objects based on the demands they make on activities.

**[9] Gleim #: 2.3.69 -- Source: CMA 1296 3-28**

The use of activity-based costing (ABC) normally results in

- A. Substantially greater unit costs for low-volume products than is reported by traditional product costing.
  - B. Substantially lower unit costs for low-volume products than is reported by traditional product costing.
  - C. Decreased setup costs being charged to low-volume products.
  - D. Equalizing setup costs for all product lines.
- Answer (A) is **correct**. ABC differs from traditional product costing because it uses multiple allocation bases and therefore allocates overhead more accurately. The result is that ABC often charges low-volume products with more overhead than a traditional system. For example, the cost of machine setup may be the same for production runs of widely varying sizes. This relationship is reflected in an ABC system that allocates setup costs on the basis of the number of setups. However, a traditional system using an allocation base such as machine hours may underallocate setup costs to low-volume products. Many companies adopting ABC have found that they have been losing money on low-volume products because costs were actually higher than originally thought.
  - Answer (B) is **incorrect**. Low-volume products are usually charged with greater unit costs under ABC.
  - Answer (C) is **incorrect**. Greater setup costs are usually charged to low-volume products under ABC.

- Answer (D) is **incorrect**. Setup costs will not be equalized unless setup time is equal for all products.

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**[Fact Pattern #1]**

Zeta Company is preparing its annual profit plan. As part of its analysis of the profitability of individual products, the controller estimates the amount of overhead that should be allocated to the individual product lines from the information given in the next column:

	Wall Mirrors	Specialty Windows
Units produced	25	25
Material moves per product line	5	15
Direct labor hours per unit	200	200
Budgeted materials handling costs		\$50,000

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**[12] Gleim #: 2.3.72 -- Source: CMA 694 3-25**

(Refers to Fact Pattern #1)

Under a costing system that allocates overhead on the basis of direct labor hours, Zeta Company's materials handling costs allocated to one unit of wall mirrors would be

- A. \$1,000
- B. \$500
- C. \$2,000
- D. \$5,000

- Answer (A) is **correct**. If direct labor hours are used as the allocation base, the \$50,000 of costs is allocated over 400 hours of direct labor. Multiplying the 25 units of each product times 200 hours results in 5,000 labor hours for each product, or a total of 10,000 hours. Dividing \$50,000 by 10,000 hours results in a cost of \$5 per direct labor hour. Multiplying 200 hours times \$5 results in an allocation of \$1,000 of overhead per unit of product.
- Answer (B) is **incorrect**. The amount of \$500 is the allocation based on number of material moves.
- Answer (C) is **incorrect**. The amount of \$2,000 assumes that all the overhead is allocated to the wall mirrors.
- Answer (D) is **incorrect**. The amount of \$5,000 assumes overhead of \$250,000.

[13] Gleim #: 2.3.73 -- Source: CMA 694 3-26

(Refers to Fact Pattern #1)

Under activity-based costing (ABC), Zeta's materials handling costs allocated to one unit of wall mirrors would be

- A. \$1,000
- B. \$500
- C. \$1,500
- D. \$2,500

- Answer (A) is **incorrect**. The amount of \$1,000 uses direct labor as the allocation basis.
- Answer (B) is **correct**. An activity-based costing (ABC) system allocates overhead costs on the basis of some causal relationship between the incurrence of cost and activities. Because the moves for wall mirrors constitute 25% ( $5 \div 20$ ) of total moves, the mirrors should absorb 25% of the total materials handling costs. Thus, \$12,500 ( $\$50,000 \times 25\%$ ) is allocated to mirrors. The remaining \$37,500 is allocated to specialty windows. Dividing the \$12,500 by 25 units produces a cost of \$500 per unit of mirrors.
- Answer (C) is **incorrect**. The amount of \$1,500 is the allocation per unit of specialty windows.
- Answer (D) is **incorrect**. The amount of \$2,500 is not based on the number of material moves.

[14] Gleim #: 2.3.74 -- Source: CMA 693 3-2

Because of changes that are occurring in the basic operations of many firms, all of the following represent trends in the way indirect costs are allocated **except**

- A. Treating direct labor as an indirect manufacturing cost in an automated factory.
  - B. Using throughput time as an application base to increase awareness of the costs associated with lengthened throughput time.
  - C. Preferring plant-wide application rates that are applied to machine hours rather than incurring the cost of detailed allocations.
  - D. Using several machine cost pools to measure product costs on the basis of time in a machine center.
- Answer (A) is **incorrect**. Computerization has decreased the amount of direct labor to the point that some companies are treating direct labor as an indirect factory overhead cost.

- Answer (B) is **incorrect**. Throughput time (the rate of production over a stated time), clearly drives (influences) costs.
- Answer (C) is **correct**. With the automation of factories and the corresponding emphasis on activity-based costing (ABC), companies are finding new ways of allocating indirect factory overhead. One change is that plant-wide application rates are being used less often because a closer matching of costs with cost drivers provides better information to management. ABC results in a more accurate application of indirect costs because it provides more refined data. Instead of a single cost goal for a process, a department, or even an entire plant, an indirect cost pool is established for each identified activity. The related cost driver, the factor that changes the cost of the activity, also is identified.
- Answer (D) is **incorrect**. Multiple cost pools are preferable. They permit a better matching of indirect costs with cost drivers.

**[17] Gleim #: 2.3.77 -- Source: CMA 1293 3-15**

Multiple or departmental overhead rates are considered preferable to a single or plantwide overhead rate when

- A. Manufacturing is limited to a single product flowing through identical departments in a fixed sequence.
  - B. Various products are manufactured that do not pass through the same departments or use the same manufacturing techniques.
  - C. Cost drivers, such as direct labor, are the same over all processes.
  - D. Individual cost drivers cannot accurately be determined with respect to cause-and-effect relationships.
- 
- Answer (A) is **incorrect**. One rate may be cost beneficial when a single product proceeds through homogeneous processes.
  - Answer (B) is **correct**. Multiple rates are appropriate when a process differs substantially among departments or when products do not go through all departments or all processes. The trend in cost accounting is toward activity-based costing, which divides production into numerous activities and identifies the cost driver(s) most relevant to each. The result is a more accurate tracing of costs.
  - Answer (C) is **incorrect**. If cost drivers are the same for all processes, multiple rates are unnecessary.
  - Answer (D) is **incorrect**. Individual cost drivers for all relationships must be known to use multiple application rates.

**[18] Gleim #: 2.3.78 -- Source: CMA 696 3-30**

New-Rage Cosmetics has used a traditional cost accounting system to apply quality control costs uniformly to all products at a rate of 14.5% of direct labor cost. Monthly direct labor cost for Satin Sheen makeup is \$27,500. In an attempt to distribute quality control costs more equitably, New-Rage is considering activity-based costing. The monthly data shown in the chart below have been gathered for Satin Sheen makeup.

Activity	Cost Driver	Cost Rates	Quantity for Satin Sheen
Incoming material inspection	Type of material	\$11.50 per type	12 types
In-process inspection	Number of units	\$0.14 per unit	17,500 units
Product certification	Per order	\$77 per order	25 orders

The monthly quality control cost assigned to Satin Sheen makeup using activity-based costing (ABC) is

- A. \$88.64 per order.
- B. \$525.50 lower than the cost using the traditional system.
- C. \$8,500.50
- D. \$525.50 higher than the cost using the traditional system.

- Answer (A) is **incorrect**. The ABC assignment of \$4,513 is at a rate of \$180.52 for each of the 25 orders.
- Answer (B) is **incorrect**. ABC yields a higher allocation.
- Answer (C) is **incorrect**. The total is \$4,513 on the ABC basis.
- Answer (D) is **correct**. ABC identifies the causal relationship between the incurrence of cost and activities, determines the drivers of the activities, establishes cost pools related to the drivers and activities, and assigns costs to ultimate cost objects on the basis of the demands (resources or drivers consumed) placed on the activities by those cost objects. Hence, ABC assigns overhead costs based on multiple allocation bases or cost drivers. Under the traditional, single-base system, the amount allocated is \$3,987.50 ( $\$27,500 \times 14.5\%$ ). Under ABC, the amount allocated is \$4,513 [ $(12 \times \$11.50) + (17,500 \times \$0.14) + (25 \times \$77)$ ], or \$525.50 more than under the traditional system.

[21] Gleim #: 2.3.81 -- Source: CMA 0205 2-24

Sanscom Corporation utilizes an activity-based costing system for applying costs to its two products, P and Q. In the assembly department, material handling costs vary directly with the number of parts inserted into the product. Machinery is recalibrated and oiled each weekend regardless of the number of parts inserted during the previous week. Both material handling and machinery maintenance costs are charged to the product on the basis of the number of parts inserted. Due to reengineering of the production process for Product P, the number of insertion parts per finished unit has been reduced. How will the redesign of the production process for Product P affect the activity-based cost of Product Q?

- A. Material handling cost per Q will remain unchanged, and machinery maintenance cost per Q unit will remain unchanged.
  - B. Material handling cost per Q unit will increase, and machinery maintenance cost per Q unit will remain unchanged.
  - C. Material handling cost per Q will remain unchanged, and machinery maintenance cost per Q unit will increase.
  - D. Material handling cost per Q unit will increase, and machinery maintenance cost per Q unit will increase.
- Answer (A) is **incorrect**. The spreading of fixed costs over fewer units of input will cause Q's machinery maintenance cost to increase.
  - Answer (B) is **incorrect**. Material handling cost on a per-unit basis for Q is unaffected by the newly gained efficiency in the process for P.
  - Answer (C) is **correct**. The material handling cost (a variable cost) for both products remains unchanged on a per-unit basis. However, the newly gained efficiency in the production of Product P means the machinery maintenance cost (a fixed cost) of the assembly department is being spread over fewer units of input, so per-unit fixed costs (for both products) will increase.
  - Answer (D) is **incorrect**. The per-unit material handling cost for Q, a variable cost, will not change as a result of the newly gained efficiency in the process for P.

**[22] Gleim #: 2.3.82 -- Source: CMA 0408 2-096**

When using activity-based costing techniques, which one of the following departmental activities would be expected to use machine hours as a cost driver to allocate overhead costs to production?

- A. Plant cafeteria.
- B. Machine setups.
- C. Material handling.
- D. Robotics painting.

- Answer (A) is **incorrect**. Machine hours are irrelevant to the cafeteria.
- Answer (B) is **incorrect**. The number of times the machinery has to be set up bears no relationship to the number of hours of use.
- Answer (C) is **incorrect**. Materials handling is not related to machine hours.
- Answer (D) is **correct**. Machine hours are a direct measure of the level of use of a robotic painting operation.

**[23] Gleim #: 2.3.83 -- Source: CMA 0408 2-125**

A company is considering the implementation of an activity-based costing and management program. The company

- A. Should focus on manufacturing activities and avoid implementation with service-type functions.
- B. Would probably find a lack of software in the marketplace to assist with the related recordkeeping.
- C. Would normally gain added insights into causes of cost.
- D. Would likely use fewer cost pools than it did under more traditional accounting methods.

- Answer (A) is **incorrect**. Activity-based costing is suitable for service-type functions.
- Answer (B) is **incorrect**. Software exists to help firms implement activity-based management.
- Answer (C) is **correct**. One of the benefits of activity-based costing is the discovery of cost relationships that went unnoticed under traditional accounting methods.
- Answer (D) is **incorrect**. Activity-based costing generally results in many more cost pools than under traditional accounting methods.

**[24] Gleim #: 2.3.84 -- Source: CMA 0408 2-140**

All of the following are likely to be used as a cost allocation base in activity-based costing **except** the

- A. Number of different materials used to manufacture the product.
- B. Units of materials used to manufacture the product.
- C. Number of vendors supplying the materials used to manufacture the product.
- D. Cost of materials used to manufacture the product.

- Answer (A) is **incorrect**. The number of different materials used to manufacture a product can be a cost driver. Different materials often require different setups and thus a proportional amount of employee time.
- Answer (B) is **incorrect**. The units of materials used to manufacture a product can be a cost driver. Units of material used directly reflects the amount of employee time spent on the production process.
- Answer (C) is **incorrect**. The number of vendors supplying the materials used to manufacture the product can be a cost driver. Each supplier requires servicing by buyers and other personnel, and thus the number of suppliers directly reflects the level of production activity.
- Answer (D) is **correct**. Activity-based costing is founded on the idea that drivers for indirect cost assignment should be based on some level of activity. Cost of materials does not directly reflect a level of a given activity.



**[25] Gleim #: 2.3.85 -- Source: CMA 0408 2-141**

Pelder Products Company manufactures two types of engineering diagnostic equipment used in construction. The two products are based on different technologies, x-ray and ultrasound, but are manufactured in the same factory. Pelder has computed the manufacturing cost of the x-ray and ultrasound products by adding together direct materials, direct labor, and overhead cost applied based on the number of direct labor hours. The factory has three overhead departments that support the single production line that makes both products. Budgeted overhead spending for the departments is as follows:

Department			
Engineering design	Material handling	Setup	Total
\$6,000	\$5,000	\$3,000	<u>\$14,000</u>

Pelder's budgeted manufacturing activities and costs for the period are as follows:

Activity	Product	
	X-Ray	Ultrasound
Units produced and sold	50	100
Direct materials used	\$5,000	\$8,000
Direct labor hours used	100	300
Direct labor cost	\$4,000	\$12,000
Number of parts used	400	600
Number of engineering changes	2	1
Number of product setups	8	7

The budgeted cost to manufacture one ultrasound machine using the activity-based costing method is

- A. \$225
- B. \$264
- C. \$293
- D. \$305

- Answer (A) is **incorrect**. The amount of \$225 results from using x-ray direct labor rather than ultrasound direct labor.

- Answer (B) is **correct**. Charges for direct materials and direct labor are traceable to each type of machine (\$8,000 and \$12,000 respectively for the ultrasound). The departmental costs must be allocated based on each machine's proportional driver level. Engineering design costs can be allocated to the ultrasound machine at a rate of 33.3% [ $1 \div (1 + 2)$ ], material handling at a rate of 60% [ $600 \div (600 + 400)$ ], and setup at a rate of 46.7% [ $7 \div (7 + 8)$ ]. Pelder's cost for a single ultrasound machine can thus be calculated as follows:

	For 100 Units
Direct materials (\$8,000)	\$ 80
Direct labor (\$12,000)	120
Engineering changes ( $\$6,000 \times 33.3\%$ )	20
Material handling ( $\$5,000 \times 60\%$ )	30
Setup ( $\$3,000 \times 46.7\%$ )	14
Total	<u><u>\$264</u></u>

- Answer (C) is **incorrect**. The amount of \$293 results from improperly using the units of production to allocate the engineering, handling, and setup costs.
- Answer (D) is **incorrect**. The amount of \$305 results from improperly using direct labor hours to allocate the engineering, handling, and setup costs.

**[26] Gleim #: 2.3.86 -- Source: CMA 0408 2-142**

The Chocolate Baker specializes in chocolate baked goods. The firm has long assessed the profitability of a product line by comparing revenues to the cost of goods sold. However, Barry White, the firm's new accountant, wants to use an activity-based costing system that takes into consideration the cost of the delivery person. Listed below are activity and cost information relating to two of Chocolate Baker's major products.

	<u>Muffins</u>	<u>Cheesecake</u>
Revenue	\$53,000	\$46,000
Cost of goods sold	26,000	21,000
Delivery Activity:		
Number of deliveries	150	85
Average length of delivery	10 minutes	15 minutes
Cost per hour for delivery	\$20.00	\$20.00

Using activity-based costing, which one of the following statements is correct?

- A. The muffins are \$2,000 more profitable.
  - B. The cheesecakes are \$75 more profitable.
  - C. The muffins are \$1,925 more profitable.
  - D. The muffins have a higher profitability as a percentage of sales and therefore are more advantageous.
- Answer (A) is **incorrect**. Muffins exceed cheesecake by \$2,000 only at the gross margin, not the total profitability, level.
  - Answer (B) is **incorrect**. The total delivery cost for muffins exceeds that of cheesecake by \$75.

- Answer (C) is **correct**. White's first step is to calculate the gross margin on the two products:

	<u>Muffins</u>	<u>Cheesecake</u>
Revenues	\$53,000	\$46,000
Cost of goods sold	(26,000)	(21,000)
Gross margin	<u>\$27,000</u>	<u>\$25,000</u>

The next step is to calculate total delivery cost for each product:

	<u>Muffins</u>	<u>Cheesecake</u>
Number of deliveries	150	85
Times: minutes per delivery	$\times \underline{10}$	$\times \underline{15}$
Total delivery minutes	1,500	1,275
Divided by: minutes per hour	$\div \underline{60}$	$\div \underline{60}$
Total delivery hours	25.00	21.25
Times: delivery cost per hour	$\times \underline{\$20}$	$\times \underline{\$20}$
Total delivery cost	<u>\$500</u>	<u>\$425</u>

The operating profits on these two products, and the difference between them, can now be determined:

Muffins:	$\$27,000 - \$500 =$	\$26,500
Cheesecake:	$\$25,000 - \$425 =$	<u>\$24,575</u>
Excess		<u>\$ 1,925</u>

- Answer (D) is **incorrect**. Muffins ( $\$26,500 \div \$53,000 = 50.0\%$ ) have a lower profitability percentage than cheesecake ( $\$24,575 \div \$46,000 = 53.4\%$ ).

**[Fact Pattern #2]**

Atmel, Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead costs	<u><u>\$975,000</u></u>

**[27] Gleim #: 2.3.87 -- Source: CMA 0408 2-143**

(Refers to Fact Pattern #2)

Using activity-based costing, Atmel's per unit overhead cost allocation of receiving costs for Product A is

- A. \$3.75
- B. \$10.75
- C. \$19.50
- D. \$28.13

- Answer (A) is **correct**. The first step in performing an activity-based costing assignment is to divide the dollar amount of the indirect cost activity in question by the number of units of the appropriate allocation base. Total receiving costs for both products amounted to \$450,000. Between them, Products A and B had 200 (50 + 150) receiving orders. Thus, the allocation rate is \$2,250 per order ( $\$450,000 \div 200$  orders). The amount allocated to Product A is \$112,500 (50 orders  $\times$  \$2,250). Dividing this amount by the number of units of Product A (30,000) results in a per-unit receiving cost of \$3.75.

- Answer (B) is **incorrect**. The amount of \$10.75 is the total per-unit assigned indirect cost for Product A, not just receiving cost.
- Answer (C) is **incorrect**. The amount of \$19.50 results from simply dividing the total budgeted overhead by half the budgeted machine hours.
- Answer (D) is **incorrect**. The amount of \$28.13 is the per-unit receiving cost for Product B.

**[28] Gleim #: 2.3.88 -- Source: CMA 0408 2-156**

(Refers to Fact Pattern #2)

Atmel's cost driver for engineering costs is the number of production orders per product line. Using activity-based costing, the engineering cost per unit for Product B is

- A. \$4.00
- B. \$10.00
- C. \$15.00
- D. \$29.25

- Answer (A) is **incorrect**. The per-unit engineering cost for Product A is \$4.00.
- Answer (B) is **incorrect**. The amount of \$10.00 is the inspection cost, not the engineering cost, per unit.
- Answer (C) is **correct**. The first step in performing an activity-based costing assignment is to divide the dollar amount of the indirect cost activity in question by the number of units of the appropriate allocation base. Total engineering costs for both products amounted to \$300,000. Between them, Products A and B had 30 (12 + 18) production orders. Thus, the allocation rate is \$10,000 per order ( $\$300,000 \div 30$  orders). The amount allocated to Product B is \$180,000 (18 orders  $\times$  \$10,000). Dividing this amount by the number of units of Product B (12,000) results in a per-unit engineering cost of \$15.00.
- Answer (D) is **incorrect**. The amount of \$29.25 results from allocating the total \$975,000 using two bases and then dividing by the units of Product B [ $975,000 \times (12 \div 20) \times (18 \div 30) = 351,000 \div 12,000 = 29.25$ ], which is incorrect.

[1] Gleim #: 2.4.89 -- Source: CMA 1296 3-29

Life-cycle costing

- A. Is sometimes used as a basis for cost planning and product pricing.
  - B. Includes only manufacturing costs incurred over the life of the product.
  - C. Includes only manufacturing cost, selling expense, and distribution expense.
  - D. Emphasizes cost savings opportunities during the manufacturing cycle.
- Answer (A) is **correct**. Life-cycle costing estimates a product's revenues and expenses over its expected life cycle. This approach is especially useful when revenues and related costs do not occur in the same periods. It emphasizes the need to price products to cover all costs, not just those for production. Hence, costs are determined for all value-chain categories: upstream (R&D, design), manufacturing, and downstream (marketing, distribution, and customer service). The result is to highlight upstream and downstream costs in the cost planning process that often receive insufficient attention.
  - Answer (B) is **incorrect**. The life-cycle model includes the upstream (R&D and design) and downstream (marketing, distribution, and customer service) elements of the value chain as well as manufacturing costs.
  - Answer (C) is **incorrect**. The life-cycle model includes the upstream (R&D and design) and downstream (marketing, distribution, and customer service) elements of the value chain as well as manufacturing costs.
  - Answer (D) is **incorrect**. Life-cycle costing emphasizes the significance of locked-in costs, target costing, and value engineering for pricing and cost control. Thus, cost savings at all stages of the life cycle are important.

[2] Gleim #: 2.4.90 -- Source: CMA 697 3-5

Target pricing

- A. Is more effective when applied to mature, long-established products.
  - B. Considers short-term variable costs and excludes fixed costs.
  - C. Is often used when costs are difficult to control.
  - D. Is a pricing strategy used to create competitive advantage.
- Answer (A) is **incorrect**. Target pricing is used on products that have not yet been developed.
  - Answer (B) is **incorrect**. Target pricing considers all costs in the value chain.

- Answer (C) is **incorrect**. Target pricing can be used in any situation, but it is most likely to succeed when costs can be well controlled.
- Answer (D) is **correct**. Target pricing and costing may result in a competitive advantage because it is a customer-oriented approach that focuses on what products can be sold at what prices. It is also advantageous because it emphasizes control of costs prior to their being locked in during the early links in the value chain. The company sets a target price for a potential product reflecting what it believes consumers will pay and competitors will do. After subtracting the desired profit margin, the long-run target cost is known. If current costs are too high to allow an acceptable profit, cost-cutting measures are implemented or the product is abandoned. The assumption is that the target price is a constraint.

**[3] Gleim #: 2.4.91 -- Source: CMA 696 3-15**

In target costing,

- A. The market price of the product is taken as a given.
  - B. Only raw materials, labor, and variable overhead cannot exceed a threshold target.
  - C. Only raw materials cannot exceed a threshold target.
  - D. Raw materials are recorded directly to cost of goods sold.
- Answer (A) is **correct**. Target costing begins with a target price, which is the expected market price given the company's knowledge of its customers and competitors. Subtracting the unit target profit margin determines the long-term target cost. If this cost is lower than the full cost, the company may need to adopt comprehensive cost-cutting measures. For example, in the furniture industry, certain price points are popular with buyers: A couch might sell better at \$400 than at \$200 because consumers question the quality of a \$200 couch and thus will not buy the lower-priced item. The result is that furniture manufacturers view \$400 as the target price of a couch, and the cost must be lower.
  - Answer (B) is **incorrect**. All product cost categories are addressed by target costing.
  - Answer (C) is **incorrect**. All product cost categories are addressed by target costing.
  - Answer (D) is **incorrect**. The manner in which raw materials costs are accounted for is irrelevant.



**[8] Gleim #: 2.4.96 -- Source: CMA 0205 2-25**

Claremont Company has been asked to evaluate the profitability of a product that it manufactured and sold from Year 7 through Year 10. The product had a one-year warranty from date of sale. The following information appears in the financial records.

Research, development, and design cost	Manufacturing and distribution costs	Warranty costs	Warranty cost
<u>Yr 5 &amp; Yr 6</u>	<u>Yr 7 - Yr 10</u>	<u>Yr 7 - Yr 10</u>	<u>Yr 11</u>
\$5,000,000	\$7,000,000	\$200,000	\$100,000

The life-cycle cost for this product is

- A. \$10,000,000
- B. \$12,000,000
- C. \$12,200,000
- D. \$12,300,000

- Answer (A) is **incorrect**. The amount of \$10,000,000 is not supported by the information given.
- Answer (B) is **incorrect**. The amount of \$12,000,000 improperly excludes future warranty costs.
- Answer (C) is **incorrect**. The amount of \$12,200,000 improperly excludes the \$100,000 of warranty costs for Year 11.
- Answer (D) is **correct**. Life-cycle costing takes into account costs incurred at all stages of the value-chain, not just manufacturing. The life-cycle cost for this product is thus \$12,300,000 (\$5,000,000 + \$7,000,000 + \$200,000 + \$100,000).

[1] Gleim #: 3.1.1 -- Source: CMA 1273 4-1

Which of the following statements is true for a firm that uses variable costing?

- A. The cost of a unit of product changes because of changes in number of units manufactured.
- B. Profits fluctuate with sales.
- C. An idle facility variation is calculated.
- D. Product costs include variable administrative costs.

- Answer (A) is **incorrect**. The cost of a unit of product changing owing to a change in the number of units manufactured is a characteristic of absorption costing systems.
- Answer (B) is **correct**. In a variable costing system, only the variable costs are recorded as product costs. All fixed costs are expensed in the period incurred. Because changes in the relationship between production levels and sales levels do not cause changes in the amount of fixed manufacturing cost expensed, profits more directly follow the trends in sales.
- Answer (C) is **incorrect**. Idle facility variation is a characteristic of absorption costing systems.
- Answer (D) is **incorrect**. Neither variable nor absorption costing includes administrative costs in inventory.

[2] Gleim #: 3.1.2 -- Source: CMA 1273 4-2

When a firm prepares financial reports by using absorption costing,

- A. Profits will always increase with increases in sales.
  - B. Profits will always decrease with decreases in sales.
  - C. Profits may decrease with increased sales even if there is no change in selling prices and costs.
  - D. Decreased output and constant sales result in increased profits.
- Answer (A) is **incorrect**. Profit is a function of both sales and production, so it will not always move in the same direction as sales.
  - Answer (B) is **incorrect**. Profit is a function of both sales and production, so it will not always move in the same direction as sales.

- Answer (C) is **correct**. In an absorption costing system, fixed overhead costs are included in inventory. When sales exceed production, more overhead is expensed under absorption costing due to fixed overhead carried over from the prior inventory. If sales increase over production, more than one period's overhead is recognized as expense. Accordingly, if the increase in overhead expensed is greater than the contribution margin of the increased units sold, profit may be lower with an increased level of sales.
- Answer (D) is **incorrect**. Decreased output will increase the unit cost of items sold. Fixed overhead per unit will increase.

**[3] Gleim #: 3.1.3 -- Source: CMA 697 3-3**

Which method of inventory costing treats direct manufacturing costs and manufacturing overhead costs, both variable and fixed, as inventoriable costs?

- A. Direct costing.
- B. Variable costing.
- C. Absorption costing.
- D. Conversion costing.

- Answer (A) is **incorrect**. Variable (direct) costing does not inventory fixed overhead.
- Answer (B) is **incorrect**. Variable (direct) costing does not inventory fixed overhead.
- Answer (C) is **correct**. Absorption (full) costing considers all manufacturing costs to be inventoriable as product costs. These costs include variable and fixed manufacturing costs, whether direct or indirect. The alternative to absorption is known as variable (direct) costing.
- Answer (D) is **incorrect**. Conversion costs include direct labor and overhead but not direct materials.

**[4] Gleim #: 3.1.4 -- Source: CMA 1295 3-28**

The difference between the sales price and total variable costs is

- A. Gross operating profit.
- B. Net profit.
- C. The breakeven point.
- D. The contribution margin.

- Answer (A) is **incorrect**. Gross operating profit is the net result after deducting all manufacturing costs from sales, including both fixed and variable costs.

- Answer (B) is **incorrect**. Net profit is the remainder after deducting from revenue all costs, both fixed and variable.
- Answer (C) is **incorrect**. The breakeven point is the level of sales that equals the sum of fixed and variable costs.
- Answer (D) is **correct**. The contribution margin is calculated by subtracting all variable costs from sales revenue. It represents the portion of sales that is available for covering fixed costs and profit.

**[5] Gleim #: 3.1.5 -- Source: CMA 696 3-20**

The contribution margin is the excess of revenues over

- A. Cost of goods sold.
- B. Manufacturing cost.
- C. Direct cost.
- D. All variable costs.

- Answer (A) is **incorrect**. Revenues minus cost of goods sold is gross profit (margin).
- Answer (B) is **incorrect**. Nonmanufacturing variable costs are also part of the calculation.
- Answer (C) is **incorrect**. A direct cost is a cost that can be feasibly associated with a single cost object.
- Answer (D) is **correct**. Contribution margin is the excess of revenues over all variable costs (including both manufacturing and nonmanufacturing variable costs) that vary with an output-related cost driver. The contribution margin equals the revenues that contribute toward covering the fixed costs and providing a net income.

**[6] Gleim #: 3.1.6 -- Source: CMA 697 3-10**

Which one of the following statements is true regarding absorption costing and variable costing?

- A. Overhead costs are treated in the same manner under both costing methods.
  - B. If finished goods inventory increases, absorption costing results in higher income.
  - C. Variable manufacturing costs are lower under variable costing.
  - D. Gross margins are the same under both costing methods.
- Answer (A) is **incorrect**. Fixed overhead is treated differently under the two methods.

- Answer (B) is **correct**. Under variable costing, inventories are charged only with the variable costs of production. Fixed manufacturing costs are expensed as period costs. Absorption costing charges to inventory all costs of production. If finished goods inventory increases, absorption costing results in higher income because it capitalizes some fixed costs that would have been expensed under variable costing. When inventory declines, variable costing results in higher income because some fixed costs capitalized under the absorption method in prior periods are expensed in the current period.
- Answer (C) is **incorrect**. Variable costs are the same under either method.
- Answer (D) is **incorrect**. Gross margins will be different. Fixed factory overhead is expensed under variable costing and capitalized under the absorption method.

**[7] Gleim #: 3.1.7 -- Source: CMA 1292 3-26**

Jansen, Inc., pays bonuses to its managers based on operating income. The company uses absorption costing, and overhead is applied on the basis of direct labor hours. To increase bonuses, Jansen's managers may do all of the following **except**

- A. Produce those products requiring the most direct labor.
  - B. Defer expenses such as maintenance to a future period.
  - C. Increase production schedules independent of customer demands.
  - D. Decrease production of those items requiring the most direct labor.
- Answer (A) is **incorrect**. Producing more of the products requiring the most direct labor will permit more fixed overhead to be capitalized in the inventory account.
  - Answer (B) is **incorrect**. Deferring expenses such as maintenance will increase income in the current period (but may result in long-range losses caused by excessive down-time).
  - Answer (C) is **incorrect**. Increasing production without a concurrent increase in demand applies more fixed costs to inventory.
  - Answer (D) is **correct**. Under an absorption costing system, income can be manipulated by producing more products than are sold because more fixed manufacturing overhead will be allocated to the ending inventory. When inventory increases, some fixed costs are capitalized rather than expensed. Decreasing production, however, will result in lower income because more of the fixed manufacturing overhead will be expensed.

[8] Gleim #: 3.1.8 -- Source: CMA 1292 3-6

The costing method that is properly classified for both external and internal reporting purposes is

	External Reporting	Internal Reporting
A. Activity-based costing	No	Yes
B. Job-order costing	No	Yes
C. Variable costing	No	Yes
D. Process costing	No	No

- Answer (A) is **incorrect**. ABC is appropriate for external as well as internal purposes.
- Answer (B) is **incorrect**. Job-order costing is acceptable for external reporting purposes.
- Answer (C) is **correct**. Activity-based costing, job-order costing, process costing, and standard costing can all be used for both internal and external purposes. Variable costing is not acceptable under GAAP for external reporting purposes.
- Answer (D) is **incorrect**. Process costing is acceptable for external reporting purposes.

[9] Gleim #: 3.1.9 -- Source: CMA 1292 3-5

Absorption costing and variable costing are two different methods of assigning costs to units produced. Of the four cost items listed below, identify the one that is **not** correctly accounted for as a product cost.

	Part of Product Cost Under	
	Absorption Costing	Variable Costing
A. Manufacturing supplies	Yes	Yes
B. Insurance on factory	Yes	No
C. Direct labor cost	Yes	Yes
D. Packaging and shipping costs	Yes	Yes

- Answer (A) is **incorrect**. Manufacturing supplies are variable costs inventoried under both methods.
- Answer (B) is **incorrect**. Factory insurance is a fixed manufacturing cost inventoried under absorption costing but written off as a period cost under variable costing.
- Answer (C) is **incorrect**. Direct labor cost is a product cost under both methods.

- Answer (D) is **correct**. Under absorption costing, all manufacturing costs, both fixed and variable, are treated as product costs. Under variable costing, only variable costs of manufacturing are inventoried as product costs. Fixed manufacturing costs are expensed as period costs. Packaging and shipping costs are not product costs under either method because they are incurred after the goods have been manufactured. Instead, they are included in selling and administrative expenses for the period.

**[10] Gleim #: 3.1.10 -- Source: CMA 0205 2-18**

Which one of the following is an advantage of using variable costing?

- A. Variable costing complies with the U.S. Internal Revenue Code.
  - B. Variable costing complies with generally accepted accounting principles.
  - C. Variable costing makes cost-volume relationships more easily apparent.
  - D. Variable costing is more relevant to long-run pricing strategies.
- Answer (A) is **incorrect**. Absorption costing is required for tax purposes.
  - Answer (B) is **incorrect**. GAAP reporting requires absorption costing.
  - Answer (C) is **correct**. Under variable costing, only the variable costs of manufacturing attach to the units of output; fixed costs are expensed in the period in which they are incurred. Thus, the variations in cost directly attributable to changes in production level are immediately apparent under variable costing.
  - Answer (D) is **incorrect**. Long-run pricing is dependent upon decisions about fixed costs, which are not the focus of variable costing.

**[11] Gleim #: 3.1.11 -- Source: CMA 0205 2-19**

Huntington Corporation pays bonuses to its managers based on operating income, as calculated under variable costing. It is now 2 months before year end, and earnings have been depressed for some time. Which one of the following actions should Wanda Richards, production manager, definitely implement if she desires to maximize her bonus for this year?

- A. Step up production so that more manufacturing costs are deferred into inventory.
- B. Cut \$2.3 million of advertising and marketing costs.
- C. Postpone \$1.8 million of discretionary equipment maintenance until next year.
- D. Implement, with the aid of the controller, an activity-based costing and activity-based management system.

- Answer (A) is **incorrect**. The perverse incentive to “produce for inventory” only works under absorption costing.
- Answer (B) is **incorrect**. The production manager has no control over advertising and marketing costs.
- Answer (C) is **correct**. Because the production manager wishes to maximize her bonus for the coming year, the action she must take will necessarily have most of its effect in the short run. The action she should take to achieve this goal is to defer costs under her control until the following period.
- Answer (D) is **incorrect**. Activity-based costing and activity-based management require time, effort, and resources in the short run and only show benefits over the long run.

**[13] Gleim #: 3.1.13 -- Source: CMA 0408 2-094**

Which one of the following is the best reason for using variable costing?

- A. Fixed factory overhead is more closely related to the capacity to produce than to the production of specific units.
  - B. All costs are variable in the long term.
  - C. Variable costing is acceptable for income tax reporting purposes.
  - D. Variable costing usually results in higher operating income than if a company uses absorption costing.
- 
- Answer (A) is **correct**. Fixed factory overhead is more closely related to the capacity to produce than to the production of specific units. Variable costing thus more accurately depicts the variations in cost resulting from changes in the level of output.
  - Answer (B) is **incorrect**. While it is true that “all costs are variable in the long term,” this is not a reason to use variable costing.
  - Answer (C) is **incorrect**. Variable costing is unacceptable for either income tax or external financial reporting purposes.
  - Answer (D) is **incorrect**. Variable costing only results in higher operating income if sales exceed production.



**[14] Gleim #: 3.1.14 -- Source: CMA 0408 2-101**

If a manufacturing company uses variable costing to cost inventories, which of the following costs are considered inventoriable costs?

- A. Only raw material, direct labor, and variable manufacturing overhead costs.
- B. Only raw material, direct labor, and variable and fixed manufacturing overhead costs.
- C. Only raw material, direct labor, variable manufacturing overhead, and variable selling and administrative costs.
- D. Only raw material and direct labor costs.

- Answer (A) is **correct**. Under variable costing, only variable costs (direct materials, direct labor, and variable overhead) are considered product costs.
- Answer (B) is **incorrect**. Under variable costing, fixed overhead is not treated as a product cost.
- Answer (C) is **incorrect**. Under variable costing, variable S&A is not treated as a product cost.
- Answer (D) is **incorrect**. Under variable costing, variable overhead is also treated as a product cost.

**[15] Gleim #: 3.1.15 -- Source: CMA 0408 2-102**

Manchester Airlines is in the process of preparing a contribution margin income statement that will allow a detailed look at its variable costs and profitability of operations. Which one of the following cost combinations should be used to evaluate the variable cost per flight of the company's Boston-Las Vegas flights?

- A. Flight crew salary, fuel, and engine maintenance.
- B. Fuel, food service, and airport landing fees.
- C. Airplane depreciation, baggage handling, and airline marketing.
- D. Communication system operation, food service, and ramp personnel.

- Answer (A) is **incorrect**. Flight crew salaries do not vary with the number of trips or miles (fixed cost).
- Answer (B) is **correct**. Fuel, food service, and airport landing fees are all variable and traceable to individual flights.
- Answer (C) is **incorrect**. Marketing costs for the airline cannot be traced to individual trips.

- Answer (D) is **incorrect**. Communication system operation and ramp personnel do not vary with the number of trips or miles (fixed cost).

**[16] Gleim #: 3.1.16 -- Source: CMA 0408 2-103**

Xylon Company uses direct (variable) costing for internal reporting and absorption costing for the external financial statements. A review of the firm's internal and external disclosures will likely find

- A. A difference in the treatment of fixed selling and administrative costs.
  - B. A higher inventoriable unit cost reported to management than to the shareholders.
  - C. A contribution margin rather than gross margin in the reports released to shareholders.
  - D. Internal income figures that vary closely with sales and external income figures that are influenced by both units sold and productive output.
- Answer (A) is **incorrect**. Fixed S&A expenses are treated as period costs under both systems.
  - Answer (B) is **incorrect**. Depending on the firm's cost structure, higher unit costs can occur under either system.
  - Answer (C) is **incorrect**. Gross margin, not contribution margin, will appear in the reports prepared under the rules for external financial reporting.
  - Answer (D) is **correct**. Under variable costing, only costs that vary with the level of production are treated as product costs. Thus, internal income figures will vary closely with sales. Under absorption costing, all production costs (both variable and fixed) are treated as product costs. Thus, external income figures are influenced by both units sold and productive output.

**[17] Gleim #: 3.1.17 -- Source: CMA 0408 2-105**

Which of the following correctly shows the treatment of (1) factory insurance, (2) direct labor, and (3) finished goods shipping costs under absorption costing and variable costing?

	<u>Absorption Costing</u>		<u>Variable Costing</u>	
	Product	Period	Product	Period
	<u>Cost</u>	<u>Cost</u>	<u>Cost</u>	<u>Cost</u>
A.	1, 2	3	2	1, 3
B.	2	1, 3	1, 2	3
C.	1, 2	3	1	2, 3
D.	1	2, 3	2, 3	1

- Answer (A) is **correct**. Factory insurance (item 1) is a factory operating cost, one of the three components of manufacturing overhead (the other two being indirect materials and indirect labor). Since it is a manufacturing cost, it must be treated as a product cost under absorption costing, and since it is fixed over the relevant range, it must be treated as a period cost under variable costing. Direct labor (item 2) is treated as a product cost under both systems. Finished goods shipping (item 3) is a variable selling and administrative cost, and, as such, is treated as a period cost under both systems.
- Answer (B) is **incorrect**. Factory insurance (a fixed manufacturing cost) must be treated as a product cost under absorption costing and as a period cost under variable costing.
- Answer (C) is **incorrect**. Factory insurance (a fixed manufacturing cost) must be treated as a period cost under variable costing.
- Answer (D) is **incorrect**. Direct labor is treated as a product cost under both systems, and finished goods shipping is also treated as a period cost under both systems.

**[18] Gleim #: 3.1.18 -- Source: CMA 0408 2-113**

When comparing absorption costing with variable costing, the difference in operating income can be explained by the difference between the

- Units sold and the units produced, multiplied by the unit sales price.
- Ending inventory in units and the beginning inventory in units, multiplied by the budgeted fixed manufacturing cost per unit.
- Ending inventory in units and the beginning inventory in units, multiplied by the unit sales price.
- Units sold and the units produced, multiplied by the budgeted variable manufacturing cost per unit.

- Answer (A) is **incorrect**. Inventory is valued according to accumulated costs, not selling price.
- Answer (B) is **correct**. Absorption and variable costing differ in their treatment of fixed overhead: It is capitalized as inventory under absorption costing and not under variable costing. Thus, the difference in operating income between the two can be calculated as the difference between the ending inventory in units and the beginning inventory in units, multiplied by the budgeted fixed manufacturing cost per unit.
- Answer (C) is **incorrect**. Inventory is valued according to accumulated costs, not selling price.
- Answer (D) is **incorrect**. The difference between absorption and variable costing is accounted for by fixed, not variable, manufacturing costs.

**[19] Gleim #: 3.1.19 -- Source: CMA 0408 2-116**

Dawn Company has significant fixed overhead costs in the manufacturing of its sole product, auto mufflers. For internal reporting purposes, in which one of the following situations would ending finished goods inventory be higher under direct (variable) costing rather than under absorption costing?

- A. If more units were produced than were sold during a given year.
  - B. If more units were sold than were produced during a given year.
  - C. In all cases when ending finished goods inventory exists.
  - D. None of these situations.
- 
- Answer (A) is **incorrect**. The monetary value of ending inventory is never higher under direct costing than under absorption costing because fewer costs are capitalized under direct costing.
  - Answer (B) is **incorrect**. The monetary value of ending inventory is never higher under direct costing than under absorption costing because fewer costs are capitalized under direct costing.
  - Answer (C) is **incorrect**. The monetary value of ending inventory is never higher under direct costing than under absorption costing because fewer costs are capitalized under direct costing.
  - Answer (D) is **correct**. The monetary value of ending inventory is never higher under direct costing than under absorption costing because fewer costs are capitalized under direct costing.

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**[Fact Pattern #1]**

At the end of its fiscal year, Jubal Manufacturing recorded the data below:

Prime cost	\$800,000
Variable manufacturing overhead	100,000
Fixed manufacturing overhead	160,000
Variable selling and other expenses	80,000
Fixed selling and other expenses	40,000

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**[1] Gleim #: 3.2.20 -- Source: CMA 1286 4-18**

(Refers to Fact Pattern #1)

If Jubal uses variable costing, the inventoriable costs for the fiscal year are

- A. \$800,000
- B. \$900,000
- C. \$980,000
- D. \$1,060,000

- Answer (A) is **incorrect**. The amount of \$800,000 equals only the prime costs.
- Answer (B) is **correct**. The only costs capitalized are the variable costs of manufacturing. Prime costs (direct materials and direct labor) are variable.

Prime costs (direct materials and direct labor)	\$800,000
Variable manufacturing overhead	<u>100,000</u>
Total inventoriable costs	<u><u>\$900,000</u></u>

- Answer (C) is **incorrect**. The amount of \$980,000 includes the variable selling and other expenses.
- Answer (D) is **incorrect**. The amount of \$1,060,000 equals inventoriable costs under absorption costing.

**[2] Gleim #: 3.2.21 -- Source: CMA 1286 4-19**

(Refers to Fact Pattern #1)

Using absorption (full) costing, Jubal's inventoriable costs are

- A. \$800,000
- B. \$900,000
- C. \$1,060,000
- D. \$1,180,000

- Answer (A) is **incorrect**. The amount of \$800,000 equals only prime costs.
- Answer (B) is **incorrect**. The amount of \$900,000 equals inventoriable costs under variable costing.
- Answer (C) is **correct**. The absorption method is required for financial statements prepared according to GAAP. It charges all costs of production to inventories. The prime costs of \$800,000, variable manufacturing overhead of \$100,000, and the fixed manufacturing overhead of \$160,000 are included. They total \$1,060,000.
- Answer (D) is **incorrect**. The amount of \$1,180,000 includes the fixed and variable selling and other expenses.

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**[Fact Pattern #2]**

Osawa, Inc., planned and actually manufactured 200,000 units of its single product during its first year of operations. Variable manufacturing costs were \$30 per unit of product. Planned and actual fixed manufacturing costs were \$600,000, and selling and administrative costs totaled \$400,000. Osawa sold 120,000 units of product at a selling price of \$40 per unit.

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**[4] Gleim #: 3.2.23 -- Source: CMA 1285 4-14**

(Refers to Fact Pattern #2)

Osawa's operating income using absorption (full) costing is

- A. \$200,000
- B. \$440,000
- C. \$600,000
- D. \$840,000

- Answer (A) is **incorrect**. The amount of \$200,000 is the operating income under variable costing.

- Answer (B) is **correct**. Absorption costing net income is computed as follows:

Sales (120,000 units × \$40)	\$4,800,000
Variable production costs (200,000 units × \$30)	\$6,000,000
Fixed production costs	<u>600,000</u>
Total production costs	\$6,600,000
Ending inventory (80,000 units × \$33)	<u>(2,640,000)</u>
Cost of goods sold	<u>(3,960,000)</u>
Gross profit	\$ 840,000
Selling and administrative expenses	<u>(400,000)</u>
Operating income	<u><u>\$ 440,000</u></u>

- Answer (C) is **incorrect**. The amount of \$600,000 is the operating income that results from capitalizing \$240,000 fixed manufacturing costs and \$160,000 of selling and administrative costs (the \$160,000 is incorrect as all selling and administrative costs should be expensed).
- Answer (D) is **incorrect**. The amount of \$840,000 is the gross profit under absorption costing, i.e., before selling and administrative expenses.

**[5] Gleim #: 3.2.24 -- Source: CMA 1285 4-15**

(Refers to Fact Pattern #2)

Osawa's operating income for the year using variable costing is

- A. \$200,000
- B. \$440,000
- C. \$800,000
- D. \$600,000

- Answer (A) is **correct**. The contribution margin from manufacturing (sales – variable costs) is \$10 (\$40 – \$30) per unit sold, or \$1,200,000 (120,000 units × \$10). The fixed costs of manufacturing (\$600,000) and selling and administrative costs (\$400,000) are deducted from the contribution margin to arrive at an operating income of \$200,000. The difference between the absorption income of \$440,000 and the \$200,000 of variable costing income is attributable to capitalization of the fixed manufacturing costs under the absorption method. Because 40% of the goods produced are still in inventory (80,000 ÷ 200,000), 40% of the \$600,000 in fixed costs, or \$240,000, was capitalized under the absorption method. That amount was expensed under the variable costing method.

- Answer (B) is **incorrect**. The amount of \$440,000 is the operating income under absorption costing.
- Answer (C) is **incorrect**. The amount of \$800,000 is the operating income if fixed costs of manufacturing are not deducted.
- Answer (D) is **incorrect**. The amount of \$600,000 is the operating income that results from capitalizing 40% of both fixed manufacturing costs and selling and administrative costs.

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**[Fact Pattern #3]**

The following is taken from Fortech Company's records for the fiscal year just ended:

Direct materials used	\$300,000
Direct labor	100,000
Variable manufacturing overhead	50,000
Fixed manufacturing overhead	80,000
Selling and admin. costs--variable	40,000
Selling and admin. costs--fixed	20,000

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**[6] Gleim #: 3.2.25 -- Source: CMA 1286 4-18**

(Refers to Fact Pattern #3)

If Fortech Company uses variable costing, the inventoriable costs for the fiscal year are

- A. \$400,000
- B. \$450,000
- C. \$490,000
- D. \$530,000

- Answer (A) is **incorrect**. The amount of \$400,000 does not include \$50,000 of variable manufacturing overhead.
- Answer (B) is **correct**. Under variable costing, the only costs that are capitalized are the variable costs of manufacturing. These include

Direct materials used	\$300,000
Direct labor	100,000
Variable manufacturing overhead	<u>50,000</u>
Total inventoriable costs	<u><u>\$450,000</u></u>



- Answer (C) is **incorrect**. The \$40,000 of variable selling and administrative costs should not be included in the inventoriable costs.
- Answer (D) is **incorrect**. The amount of \$530,000 is the inventoriable cost under absorption (full) costing.

**[7] Gleim #: 3.2.26 -- Source: CMA 1286 4-19**

(Refers to Fact Pattern #3)

Using absorption (full) costing, Fortech Company's inventoriable costs are

- A. \$400,000
- B. \$450,000
- C. \$530,000
- D. \$590,000

- Answer (A) is **incorrect**. The amount of \$400,000 does not include \$80,000 of fixed manufacturing overhead and \$50,000 of variable manufacturing overhead.
- Answer (B) is **incorrect**. The amount of \$450,000 is the inventoriable cost under variable costing.
- Answer (C) is **correct**. The absorption method is required for financial statements prepared according to GAAP. It charges all costs of production to inventories. The variable cost of materials of \$300,000, direct labor of \$100,000, variable manufacturing overhead of \$50,000, and the fixed manufacturing overhead of \$80,000 are included. They total \$530,000.
- Answer (D) is **incorrect**. The amount of \$590,000 includes the fixed and variable selling and administrative costs.

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**[Fact Pattern #4]**

Estimated unit costs for Cole Lab using full absorption costing and operating at a production level of 12,000 units per month:

<u>Cost Item</u>	<u>Estimated Unit Cost</u>
Direct material	\$32
Direct labor	20
Variable manufacturing overhead	15
Fixed manufacturing overhead	6
Variable selling	3
Fixed selling	4

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**[8] Gleim #: 3.2.27 -- Source: CMA 1283 4-1**

(Refers to Fact Pattern #4)

Cole Lab's estimated conversion costs per unit are

- A. \$35
- B. \$41
- C. \$44
- D. \$48

- Answer (A) is **incorrect**. The amount of \$35 properly includes direct labor but improperly includes only the variable portion of manufacturing overhead.
- Answer (B) is **correct**. Conversion costs consist of labor plus fixed and variable manufacturing overhead. The total is \$41 (\$20 + \$15 + \$6).
- Answer (C) is **incorrect**. The amount of \$44 properly includes direct labor and both components of manufacturing overhead but improperly includes a portion of selling expenses.
- Answer (D) is **incorrect**. The amount of \$48 properly includes direct labor and both components of manufacturing overhead but improperly includes selling expenses.

**[9] Gleim #: 3.2.28 -- Source: CMA 1283 4-2**

(Refers to Fact Pattern #4)

Cole Lab's estimated prime costs per unit are

- A. \$73
- B. \$32
- C. \$67
- D. \$52

- Answer (A) is **incorrect**. The amount of \$73 properly includes direct materials and direct labor but improperly includes manufacturing overhead.
- Answer (B) is **incorrect**. The amount of \$32 properly includes direct materials but improperly excludes direct labor.
- Answer (C) is **incorrect**. The amount of \$67 properly includes direct materials and direct labor but improperly includes a portion of manufacturing overhead.
- Answer (D) is **correct**. Prime costs consist of direct materials and direct labor. The total is \$52 (\$32 + \$20).

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**[Fact Pattern #5]**

Farber Company employs a normal (nonstandard) absorption cost system. The following information is from the financial records of the company for the year.

- Total manufacturing costs were \$2,500,000.
  - Cost of goods manufactured was \$2,425,000.
  - Applied factory overhead was 30% of total manufacturing costs.
  - Factory overhead was applied to production at a rate of 80% of direct labor cost.
  - Work-in-process inventory at January 1 was 75% of work-in-process inventory at December 31.
-

**[10] Gleim #: 3.2.29 -- Source: CMA 1285 4-26**

(Refers to Fact Pattern #5)

Total cost of direct material used by Farber Company for the year is

- A. \$750,000
- B. \$812,500
- C. \$937,500
- D. \$1,150,000

- Answer (A) is **incorrect**. The amount of \$750,000 is factory overhead ( $30\% \times \$2,500,000$ ).
- Answer (B) is **correct**. Factory overhead is 30% of total manufacturing costs, or \$750,000. Direct labor is \$937,500 ( $750,000 \div 0.8$ ). Thus, raw materials must account for the remaining \$812,500 ( $\$2,500,000 - \$750,000 - \$937,500$ ).
- Answer (C) is **incorrect**. The amount of \$937,500 is the direct labor cost.
- Answer (D) is **incorrect**. The amount of \$1,150,000 is calculated using a direct labor cost of \$600,000, which is incorrectly calculated by multiplying, instead of dividing, factory overhead by 80%.

**[11] Gleim #: 3.2.30 -- Source: CMA 1285 4-27**

(Refers to Fact Pattern #5)

The carrying value of Farber Company's work-in-process inventory at December 31 is

- A. \$300,000.
- B. \$225,000.
- C. \$100,000.
- D. \$75,000.

- Answer (A) is **correct**. Cost of goods manufactured (\$2,425,000) equals total manufacturing costs (\$2,500,000) plus beginning work-in-process (75% of EWIP) minus ending work-in-process. The ending work-in-process is \$300,000.

$$\begin{aligned}\$2,500,000 + .75 \text{ EWIP} - \text{EWIP} &= \$2,425,000 \\ \$2,500,000 - .25 \text{ EWIP} &= \$2,425,000 \\ \text{EWIP} &= \$75,000 \div .25 \\ \text{EWIP} &= \$300,000\end{aligned}$$

- Answer (B) is **incorrect**. The amount of \$225,000 is the value of work-in-process inventory at January 1.

- Answer (C) is **incorrect**. The amount of \$100,000 is calculated without taking the ending work-in-process inventory into account.
- Answer (D) is **incorrect**. The amount of \$75,000 equals total manufacturing costs of goods manufactured. However, the cost of goods manufactured equals total manufacturing costs plus BWIP minus EWIP.

**[12] Gleim #: 3.2.31 -- Source: CMA 1285 4-25**

(Refers to Fact Pattern #5)

Farber Company's total direct labor cost for the year is

- A. \$750,000
- B. \$600,000
- C. \$909,375
- D. \$937,500

- Answer (A) is **incorrect**. The amount of \$750,000 equals the factory overhead.
- Answer (B) is **incorrect**. The amount of \$600,000 is calculated by multiplying factory overhead of \$750,000 by 80%.
- Answer (C) is **incorrect**. The amount of \$909,375 is calculated by applying 30% to costs of goods manufactured, not total manufacturing costs, to determine factory overhead.
- Answer (D) is **correct**. Total manufacturing cost of \$2,500,000 is composed of raw materials, direct labor, and factory overhead. Factory overhead is 30% of total manufacturing costs, or \$750,000. If factory overhead is 80% of direct labor cost, direct labor cost is \$937,500 ( $\$750,000 \div 80\%$ ).

**[Fact Pattern #6]**

Valyn Corporation employs an absorption costing system for internal reporting purposes; however, the company is considering using variable costing. Data regarding Valyn's planned and actual operations for the calendar year are presented below.

	<u>Planned Activity</u>	<u>Actual Activity</u>
Beginning finished goods inventory in units	35,000	35,000
Sales in units	140,000	125,000
Production in units	140,000	130,000

The planned per-unit cost figures shown in the schedule were based on the estimated production and sale of 140,000 units for the year. Valyn uses a predetermined manufacturing overhead rate for applying manufacturing overhead to its product; thus, a combined manufacturing overhead rate of \$9.00 per unit was employed for absorption costing purposes. Any over- or underapplied manufacturing overhead is closed to the cost of goods sold account at the end of the reporting year.

	<u>Planned Costs</u>		<u>Incurred Costs</u>
	<u>Per Unit</u>	<u>Total</u>	
Direct materials	\$12.00	\$1,680,000	\$1,560,000
Direct labor	9.00	1,260,000	1,170,000
Variable manufacturing overhead	4.00	560,000	520,000
Fixed manufacturing overhead	5.00	700,000	715,000
Variable selling expenses	8.00	1,120,000	1,000,000
Fixed selling expenses	7.00	980,000	980,000
Variable administrative expenses	2.00	280,000	250,000
Fixed administrative expenses	3.00	420,000	425,000
<b>Total</b>	<u><b>\$50.00</b></u>	<u><b>\$7,000,000</b></u>	<u><b>\$6,620,000</b></u>

The beginning finished goods inventory for absorption costing purposes was valued at the previous year's planned unit manufacturing cost, which was the same as the current year's planned unit manufacturing cost. There are no work-in-process inventories at either the beginning or the end of the year. The planned and actual unit selling price for the current year was \$70.00 per unit.

**[13] Gleim #: 3.2.32 -- Source: CMA 1290 3-24**

(Refers to Fact Pattern #6)

The value of Valyn Corporation's actual ending finished goods inventory on the absorption costing basis was

- A. \$900,000
- B. \$1,200,000
- C. \$1,220,000
- D. \$1,350,000

- Answer (A) is **incorrect**. Ending inventory was \$1,200,000.
- Answer (B) is **correct**. Under the absorption method, unit cost is \$30 (\$12 direct materials + \$9 direct labor + \$4 variable overhead + \$5 fixed overhead). Given beginning inventory of 35,000 units, the ending inventory equals 40,000 units (35,000 BI + 130,000 produced – 125,000 sold). Hence, ending inventory was \$1,200,000 (40,000 units × \$30).
- Answer (C) is **incorrect**. Ending inventory was \$1,200,000.
- Answer (D) is **incorrect**. Ending inventory was \$1,200,000.

**[14] Gleim #: 3.2.33 -- Source: CMA 1290 3-28**

(Refers to Fact Pattern #6)

Valyn Corporation's total fixed costs expensed this year on the absorption costing basis were

- A. \$2,095,000
- B. \$2,120,000
- C. \$2,055,000
- D. \$2,030,000

- Answer (A) is **correct**. Under the absorption method, all selling and administrative fixed costs are charged to the current period. Accordingly, \$980,000 of selling expenses and \$425,000 of actual fixed administrative expenses were expensed during the year. The fixed manufacturing costs must be calculated after giving consideration to the increase in inventory during the period (some fixed costs were capitalized) and to the underapplied overhead. The beginning finished goods inventory included 35,000 units, each of which had absorbed \$5 of fixed manufacturing overhead. Each unit produced during the year also absorbed \$5 of fixed manufacturing overhead. Given that 125,000 of those units were sold, cost of goods sold was debited for \$625,000 of fixed overhead (125,000 units  $\times$  \$5). At year end, the underapplied overhead was also added to cost of goods sold. Because production was expected to be 140,000 units, the overhead application rate for the \$700,000 of planned fixed manufacturing overhead was \$5 per unit. Only 130,000 units were manufactured. Hence, \$650,000 (130,000 units  $\times$  \$5) of overhead was applied to units in process. Because inventory increased from 35,000 to 40,000 units (35,000 BI + 130,000 produced – 125,000 sold), \$25,000 (5,000-unit increase  $\times$  \$5) of the applied fixed manufacturing overhead for the period was inventoried, not expensed. Actual overhead was \$715,000, so the underapplied overhead was \$65,000 (\$715,000 – \$650,000). This amount was charged to cost of goods sold at year end. The total of the fixed costs expensed was therefore \$2,095,000 (\$980,000 selling expenses + \$425,000 administrative expenses + \$625,000 standard manufacturing overhead costs of units sold + \$65,000 underapplied overhead).
- Answer (B) is **incorrect**. The total fixed costs on the absorption costing basis were \$2,095,000.
- Answer (C) is **incorrect**. The total fixed costs on the absorption costing basis were \$2,095,000.
- Answer (D) is **incorrect**. The total fixed costs on the absorption costing basis were \$2,095,000.

**[15] Gleim #: 3.2.34 -- Source: CMA 1290 3-25**

(Refers to Fact Pattern #6)

The value of Valyn Corporation's actual ending finished goods inventory on the variable costing basis was

- A. \$1,400,000
- B. \$1,125,000
- C. \$1,000,000
- D. \$750,000

- Answer (A) is **incorrect**. Ending inventory was \$1,000,000.



- Answer (B) is **incorrect**. Ending inventory was \$1,000,000.
- Answer (C) is **correct**. Using variable costing, the unit cost of ending inventory is \$25 (\$12 direct materials + \$9 direct labor + \$4 variable overhead). Given beginning inventory of 35,000 units, the ending inventory equals 40,000 units (35,000 BI + 130,000 produced – 125,000 sold). Thus, ending inventory was \$1,000,000 (40,000 units × \$25).
- Answer (D) is **incorrect**. Ending inventory was \$1,000,000.

**[16] Gleim #: 3.2.35 -- Source: CMA 1290 3-29**

(Refers to Fact Pattern #6)

Valyn Corporation's absorption costing operating income was

- A. Higher than variable costing operating income because actual production exceeded actual sales.
  - B. Lower than variable costing operating income because actual production exceeded actual sales.
  - C. Lower than variable costing operating income because actual production was less than planned production.
  - D. Lower than variable costing operating income because actual sales were less than planned sales.
- Answer (A) is **correct**. Absorption costing results in a higher income figure than variable costing whenever production exceeds sales because absorption costing capitalizes some fixed factory overhead as part of inventory. These costs are expensed during the period incurred under variable costing. Consequently, variable costing recognizes greater expenses and lower income when production exceeds sales. The reverse is true when sales exceed production. In that case, the absorption method results in a lower income because some fixed costs of previous periods absorbed by the beginning inventory are expensed in the current period as cost of goods sold. Variable costing income is never burdened with fixed costs of previous periods.
  - Answer (B) is **incorrect**. An increase in inventory results in a higher income under absorption costing.
  - Answer (C) is **incorrect**. The important relationship is between actual production and actual sales, not between actual and planned production.
  - Answer (D) is **incorrect**. Planned sales do not determine actual income.

**[17] Gleim #: 3.2.36 -- Source: CMA 1290 3-26**

(Refers to Fact Pattern #6)

Valyn Corporation's actual manufacturing contribution margin calculated on the variable costing basis was

- A. \$4,375,000
- B. \$4,935,000
- C. \$4,910,000
- D. \$5,625,000

- Answer (A) is **incorrect**. The variable costing contribution margin was \$5,625,000.
- Answer (B) is **incorrect**. The variable costing contribution margin was \$5,625,000.
- Answer (C) is **incorrect**. The variable costing contribution margin was \$5,625,000.
- Answer (D) is **correct**. At \$70 per unit, actual sales revenue was \$8,750,000 for 125,000 units. Actual variable costs of manufacturing were \$25 per unit (\$12 + \$9 + \$4). The unit costs incurred for the actual production level of 130,000 units were the same as the unit costs for a planned production level of 140,000 units. These unit costs were the same for units manufactured in both the current and previous year. For example, total planned direct materials cost for 140,000 units was \$1,680,000, or \$12 per unit. The incurred unit cost was also \$12 (\$1,560,000 ÷ 130,000 units). Thus, total variable manufacturing cost was \$3,125,000 (125,000 units × \$25). Consequently, manufacturing contribution margin was \$5,625,000 (\$8,750,000 – \$3,125,000).

**[18] Gleim #: 3.2.37 -- Source: CMA 1290 3-27**

(Refers to Fact Pattern #6)

The total variable cost currently expensed by Valyn Corporation on the variable costing basis was

- A. \$4,375,000
- B. \$4,500,000
- C. \$4,325,000
- D. \$4,550,000

- Answer (A) is **correct**. The unit variable manufacturing cost was \$25 (\$12 direct materials + \$9 direct labor + \$4 variable overhead). Other variable costs included selling expenses (\$8 per unit) and administrative expenses (\$2 per unit). The unit selling and administrative costs actually incurred for sales of 125,000 units were the same as the planned unit costs. For example, actual unit variable selling expense was \$8 ( $\$1,000,000 \div 125,000$  units sold), which equaled the planned unit cost. Thus, total unit variable cost was \$35 (\$25 + \$8 + \$2). The total expensed was \$4,375,000 (125,000 units sold  $\times$  \$35).
- Answer (B) is **incorrect**. The total variable cost expensed on the variable costing basis was \$4,375,000.
- Answer (C) is **incorrect**. The total variable cost expensed on the variable costing basis was \$4,375,000.
- Answer (D) is **incorrect**. The total variable cost expensed on the variable costing basis was \$4,375,000.

[19] Gleim #: 3.2.38 -- Source: CMA 1290 3-30

(Refers to Fact Pattern #6)

The difference between Valyn Corporation's operating income calculated on the absorption costing basis and calculated on the variable costing basis was

- A. \$65,000
- B. \$25,000
- C. \$40,000
- D. \$90,000

- Answer (A) is **incorrect**. The difference between absorption costing and variable costing income was \$25,000.
- Answer (B) is **correct**. The difference is caused by the capitalization of some of the fixed manufacturing overhead. When inventories increase during the period, the absorption method capitalizes that overhead and transfers it to future periods. The variable costing method expenses it in the current period. Inventories increased by 5,000 units during the period, and each of those units would have included \$5 of fixed manufacturing overhead under absorption costing. Accordingly, \$25,000 of fixed manufacturing overhead would have been capitalized. Recognizing \$25,000 of fixed costs in the balance sheet instead of the income statement results in a \$25,000 difference in income between the two costing methods.
- Answer (C) is **incorrect**. The difference between absorption costing and variable costing income was \$25,000.

- Answer (D) is **incorrect**. The difference between absorption costing and variable costing income was \$25,000.

**[20] Gleim #: 3.2.39 -- Source: CMA 0408 2-037**

Troughton Company manufactures radio-controlled toy dogs. Summary budget financial data for Troughton for the current year are as follows:

Sales (5,000 units at \$150 each)	\$750,000
Variable manufacturing cost	400,000
Fixed manufacturing cost	100,000
Variable selling and administrative cost	80,000
Fixed selling and administrative cost	150,000

Troughton uses an absorption costing system with overhead applied based on the number of units produced, with a denominator level of activity of 5,000 units. Underapplied or overapplied manufacturing overhead is written off to cost of goods sold in the year incurred. The \$20,000 budgeted operating income from producing and selling 5,000 toy dogs planned for this year is of concern to Trudy George, Troughton's president. She believes she could increase operating income to \$50,000 (her bonus threshold) if Troughton produces more units than it sells, thus building up the finished goods inventory. How much of an increase in the number of units in the finished goods inventory would be needed to generate the \$50,000 budgeted operating income?

- A. 556 units.
- B. 600 units.
- C. 1,500 units.
- D. 7,500 units.

- Answer (A) is **incorrect**. The figure 556 results from using all costs, not just the fixed manufacturing costs.
- Answer (B) is **incorrect**. The figure 600 results from including fixed S&A expenses in the per-unit cost calculation.
- Answer (C) is **correct**. The president intends to engineer her bonus by "producing for inventory," that is, taking advantage of the fact that, under absorption costing, fixed costs can be piled up in ending inventory (this is why performance should be measured internally using variable costing). Each additional unit produced but left unsold adds to operating income its incremental amount of fixed production cost. Fixed production costs in Troughton's relevant range are \$20 per unit ( $\$100,000 \div 5,000$  units). Thus, to generate \$30,000 additional operating income, 1,500 units ( $\$30,000 \div \$20$ ) must be produced and moved to ending inventory.

- Answer (D) is **incorrect**. The figure 7,500 results from dividing fixed selling and administrative costs, rather than incremental operating income, by the \$20 per unit fixed production costs.

**[21] Gleim #: 3.2.40 -- Source: CMA 0408 2-104**

The marketing manager of Ames Company has learned the following about a new product that is being introduced by Ames: Sales of this product are planned at \$100,000 for the first year. Sales commission expense is budgeted at 8% of sales plus the marketing manager's incentive budgeted at an additional 1/2%. The preparation of a product brochure will require 20 hours of marketing salaried staff time at an average rate of \$100 per hour, and 10 hours at \$150 per hour for an outside illustrator's effort. The variable marketing cost for this new product will be

- A. \$8,000
- B. \$8,500
- C. \$10,000
- D. \$10,500

- Answer (A) is **incorrect**. The amount of \$8,000 results from failing to include the marketing manager's incentive.
- Answer (B) is **correct**. The variable marketing costs for the new product consist of sales commissions and the marketing manager's incentive ( $\$100,000 \times 8.5\% = \$8,500$ ).
- Answer (C) is **incorrect**. The amount of \$10,000 results from failing to include the marketing manager's incentive and from improperly including the salaried (i.e., fixed) marketing staff time.
- Answer (D) is **incorrect**. The amount of \$10,500 results from improperly including the salaried (i.e., fixed) marketing staff time.

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**[Fact Pattern #7]**

Dremmon Corporation uses a standard cost accounting system. Data for the last fiscal year are as follows:

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50
	<u>Per Unit</u>
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*
Budgeted selling and administrative costs (all fixed)	\$45,000

\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

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**[22] Gleim #: 3.2.41 -- Source: CMA 0408 2-106**

(Refers to Fact Pattern #7)

If Dremmon uses absorption costing, its operating income earned in the last fiscal year was

- A. \$21,500
- B. \$27,000
- C. \$28,000
- D. \$30,000

- Answer (A) is **correct**. Dremmon's absorption-basis operating income can be calculated as follows:

Sales			\$150,000
Beginning inventory	100 units	@ \$110 =	\$11,000
Variable production costs	700 units	@ \$90 =	63,000
Fixed production costs	700 units	@ \$20 =	14,000
Volume variance writeoff	50 units	@ \$20 =	<u>1,000</u>
Goods available for sale			\$89,000
Less: ending inventory	50 units	@ \$110 =	<u>(5,500)</u>
Absorption cost of goods sold			<u>(83,500)</u>
Gross margin			\$ 66,500
Variable S&A expenses	None		0
Fixed S&A expenses	Fixed		<u>(45,000)</u>
Operating income			<u><u>\$ 21,500</u></u>

- Answer (B) is **incorrect**. The amount of \$27,000 results from including 100 units in ending inventory rather than 50.
- Answer (C) is **incorrect**. The amount of \$28,000 results from including 100 units in ending inventory rather than 50 and from failing to write off the \$1,000 overhead volume variance.
- Answer (D) is **incorrect**. The amount of \$30,000 results from failing to include fixed manufacturing costs in cost of goods sold and failing to subtract ending inventory.

**[23] Gleim #: 3.2.42 -- Source: CMA 0408 2-108**

(Refers to Fact Pattern #7)

If Dremmon uses variable costing, its operating income earned in the last fiscal year was

- A. \$21,500
- B. \$22,500
- C. \$28,000
- D. \$31,000

- Answer (A) is **incorrect**. The amount of \$21,500 is absorption-basis operating income.

- Answer (B) is **correct**. Dremmon's variable-basis operating income can be calculated as follows:

Sales				\$150,000
Beginning inventory	100 units	@	\$90 = \$ 9,000	
Variable production costs	700 units	@	\$90 = 63,000	
Volume variance writeoff	50 units	@	\$20 = <u>1,000</u>	
Goods available for sale				\$73,000
Less: ending inventory	50 units	@	\$90 = <u>(4,500)</u>	
Variable cost of goods sold				(68,500)
Variable S&A expenses	None			<u>0</u>
Contribution margin				\$ 81,500
Fixed production costs	700 units	@	\$20 = (14,000)	
Fixed S&A expenses	Fixed			<u>(45,000)</u>
Operating income				<u><u>\$ 22,500</u></u>

- Answer (C) is **incorrect**. The amount of \$28,000 results from including 100 units in ending inventory rather than 50 and from failing to write off the \$1,000 overhead volume variance.
- Answer (D) is **incorrect**. The amount of \$31,000 results from using 750 units for variable production costs, failing to write off the overhead volume variance, and valuing inventory at \$20 rather than \$90.



[24] Gleim #: 3.2.43 -- Source: CMA 0408 2-107

Chassen Company, a cracker and cookie manufacturer, has the following unit costs for the month of June:

Variable manufacturing cost	Variable marketing cost	Fixed manufacturing cost	Fixed marketing cost
\$5.00	\$3.50	\$2.00	\$4.00

A total of 100,000 units were manufactured during June, 10,000 of which remain in ending inventory. Chassen uses the first-in, first-out (FIFO) inventory method, and the 10,000 units are the only finished goods inventory at month end. Using the full absorption costing method, Chassen's finished goods inventory value would be

- A. \$50,000
- B. \$70,000
- C. \$85,000
- D. \$145,000

- Answer (A) is **incorrect**. The amount of \$50,000 results from including only the variable portion of manufacturing cost.
- Answer (B) is **correct**. Chassen's ending inventory consists of 10,000 units, made up of \$50,000 variable manufacturing cost ( $10,000 \times \$5$ ) and \$20,000 fixed manufacturing cost ( $10,000 \times \$2$ ).
- Answer (C) is **incorrect**. The amount of \$85,000 results from including only the variable portion of manufacturing cost and improperly including a portion of marketing cost.
- Answer (D) is **incorrect**. The amount of \$145,000 results from improperly including marketing costs.

**[25] Gleim #: 3.2.44 -- Source: CMA 0408 2-110**

Bethany Company has just completed the first month of producing a new product but has not yet shipped any of this product. The product incurred variable manufacturing costs of \$5,000,000, fixed manufacturing costs of \$2,000,000, variable marketing costs of \$1,000,000, and fixed marketing costs of \$3,000,000. If Bethany uses the variable cost method to value inventory, the inventory value of the new product will be

- A. \$5,000,000
- B. \$6,000,000
- C. \$8,000,000
- D. \$11,000,000

- Answer (A) is **correct**. Under variable costing, only variable manufacturing costs are capitalized as part of inventory. Thus, Bethany's ending inventory is valued at \$5,000,000.
- Answer (B) is **incorrect**. The amount of \$6,000,000 results from improperly including a portion of marketing costs.
- Answer (C) is **incorrect**. The amount of \$8,000,000 results from improperly including costs other than variable manufacturing costs.
- Answer (D) is **incorrect**. The amount of \$11,000,000 results from improperly including costs other than variable manufacturing costs.

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**[Fact Pattern #8]**

Consider the following situation for Weisman Corporation for the prior year:

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing overhead	10
Fixed manufacturing overhead	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

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**[26] Gleim #: 3.2.45 -- Source: CMA 0408 2-111**

(Refers to Fact Pattern #8)

If Weisman uses absorption costing, its operating income earned in the last fiscal year was

- A. \$13,600
- B. \$14,200
- C. \$15,300
- D. \$15,840

- Answer (A) is **incorrect**. The amount of \$13,600 results from using variable direct costing and using 1,000 units rather than 900 for variable selling and administrative costs.
- Answer (B) is **incorrect**. The amount of \$14,200 results from using the variable direct costing method and treating fixed selling and administrative costs as variable.

- Answer (C) is **correct**. Weisman's absorption-basis operating income can be calculated as follows:

Sales	900 units @ \$100 =	\$90,000
Beginning inventory		\$ 0
Variable production costs	1,000 units @ \$60 =	60,000
Fixed production costs	1,000 units @ \$5 =	<u>5,000</u>
Goods available for sale		\$65,000
Less: ending inventory	100 units @ \$65 =	<u>(6,500)</u>
Abs. cost of goods sold		<u>(58,500)</u>
Gross margin		\$31,500
Variable S&A expenses	900 units @ \$12 =	(10,800)
Fixed S&A expenses	900 units @ \$6 =	<u>(5,400)</u>
Operating income		<u><u>\$15,300</u></u>

- Answer (D) is **incorrect**. The amount of \$15,840 results from capitalizing 10% of fixed selling and administrative costs as inventory.

**[27] Gleim #: 3.2.46 -- Source: CMA 0408 2-112**

(Refers to Fact Pattern #8)

If Weisman uses variable costing, its operating income earned in the last fiscal year was

- A. \$13,600
- B. \$14,200
- C. \$14,800
- D. \$15,300

- Answer (A) is **incorrect**. The amount of \$13,600 results from improperly basing variable selling costs on 1,000 units instead of the 900 units actually sold.
- Answer (B) is **incorrect**. The amount of \$14,200 results from improperly treating fixed S&A expenses as variable.

- Answer (C) is **correct**. Weisman's variable-basis operating income can be calculated as follows:

Sales	900 units @ \$100 =	\$90,000
Beginning inventory		\$ 0
Variable production costs	1,000 units @ \$60 =	<u>60,000</u>
Goods available for sale		\$60,000
Less: ending inventory	100 units @ \$60 =	<u>(6,000)</u>
Var. cost of goods sold		(54,000)
Variable S&A expenses	900 units @ \$12 =	<u>(10,800)</u>
Contribution margin		\$ 25,200
Fixed production costs	1,000 units @ \$5 =	(5,000)
Fixed S&A expenses	900 units @ \$6 =	<u>(5,400)</u>
Operating income		<u><u>\$14,800</u></u>

- Answer (D) is **incorrect**. The amount of \$15,300 is absorption-basis operating income.

**[28] Gleim #: 3.2.47 -- Source: CMA 0408 2-114**

Mill Corporation had the following unit costs for the recently concluded calendar year:

	<u>Variable</u>	<u>Fixed</u>
Manufacturing	\$8.00	\$3.00
Nonmanufacturing	\$2.00	\$5.50

Inventory for Mill's sole product totaled 6,000 units on January 1 and 5,200 units on December 31. When compared to variable costing income, Mill's absorption costing income is

- A. \$2,400 lower.
- B. \$2,400 higher.
- C. \$6,800 lower.
- D. \$6,800 higher.

- Answer (A) is **correct**. The difference in operating income between the absorption-costing basis and the variable-costing basis can be calculated as the difference between the ending inventory in units and the beginning inventory in units ( $6,000 - 5,200 = 800$ ), multiplied by the budgeted fixed manufacturing cost per unit (\$3), for a total difference of \$2,400. Under absorption costing, this amount is embedded in ending inventory; under variable costing, on the other hand, it is expensed as a period cost. Thus, operating income under absorption costing will be lower whenever ending inventory contracts.
- Answer (B) is **incorrect**. If there is a balance in either beginning or ending inventory, operating income will be lower under absorption costing than under variable costing.
- Answer (C) is **incorrect**. The amount of \$6,800 results from multiplying the difference in beginning and ending inventory by all fixed costs rather than by only fixed manufacturing cost.
- Answer (D) is **incorrect**. The amount of \$6,800 results from multiplying the difference in beginning and ending inventory by all fixed costs rather than by only fixed manufacturing cost; also, if there is a balance in either beginning or ending inventory, operating income will be lower under absorption costing than under variable costing.

**[29] Gleim #: 3.2.48 -- Source: CMA 0408 2-115**

During the month of May, Robinson Corporation sold 1,000 units. The cost per unit for May was as follows:

	<u>Cost per Unit</u>
Direct materials	\$ 5.50
Direct labor	3.00
Variable manufacturing overhead	1.00
Fixed manufacturing overhead	1.50
Variable administrative costs	.50
Fixed administrative costs	<u>3.50</u>
Total	<u><u>\$15.00</u></u>

May's income using absorption costing was \$9,500. The income for May, if variable costing had been used, would have been \$9,125. The number of units Robinson produced during May was

- A. 750
- B. 925
- C. 1,075
- D. 1,250

- Answer (A) is **incorrect**. The figure of 750 is the difference, not the sum, of units sold and ending inventory.
- Answer (B) is **incorrect**. The figure of 925 results from using all fixed costs instead of only the fixed manufacturing costs and then subtracting the units sold rather than adding them.
- Answer (C) is **incorrect**. The figure of 1,075 results from using all fixed costs instead of only the fixed manufacturing costs.
- Answer (D) is **correct**. The difference between absorption-basis and variable-basis operating income ( $\$9,500 - \$9,125 = \$375$ ) is equal to the change in inventory for the period (in units) multiplied by fixed manufacturing cost per unit. Stated another way, the difference in operating incomes divided by fixed per-unit manufacturing cost equals the change in ending inventory ( $\$375 \div \$1.50 = 250$  units). Since 1,000 units were sold and ending inventory increased by 250 units, 1,250 units were produced ( $1,000 + 250$ ).

**[30] Gleim #: 3.2.49 -- Source: CMA 1294 4-4**

The following information relates to Clyde Corporation, which produced and sold 50,000 units during a recent accounting period:

Sales	\$850,000
Manufacturing costs:	
Fixed	210,000
Variable	140,000
Selling and administrative costs:	
Fixed	300,000
Variable	45,000
Income tax rate	40%

For the next accounting period, if production and sales are expected to be 40,000 units, the company should anticipate a contribution margin per unit of

- A. \$1.86
- B. \$3.10
- C. \$7.30
- D. \$13.30

- Answer (A) is **incorrect**. This is an after-tax amount based on the inclusion of all fixed costs in the calculation.
- Answer (B) is **incorrect**. This amount is erroneously based on the inclusion of all fixed costs in the calculation of the UCM.

- Answer (C) is **incorrect**. Including the \$300,000 of fixed S&A costs in the calculation of the UCM results in \$7.30.
- Answer (D) is **correct**. Unit contribution margin is the difference between unit selling price and unit variable cost. Unit selling price is \$17 ( $\$850,000 \div 50,000$  units), and unit variable cost is \$3.70 [ $(\$140,000 \text{ variable manufacturing cost} + \$45,000 \text{ variable S\&A cost}) \div 50,000$  units sold]. Accordingly, unit contribution margin is \$13.30 ( $\$17 - \$3.70$ ).

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**[Fact Pattern #9]**

Kator Co. is a manufacturer of industrial components. One of their products that is used as a subcomponent in auto manufacturing is KB-96. This product has the following financial structure per unit:

Selling price	<u>\$150</u>
Direct materials	\$ 20
Direct labor	15
Variable manufacturing overhead	12
Fixed manufacturing overhead	30
Shipping and handling	3
Fixed selling and administrative	<u>10</u>
Total costs	<u><u>\$ 90</u></u>

Kator Co. has received a special, one-time order for 1,000 KB-96 parts.

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**[31] Gleim #: 3.2.50 -- Source: CMA 1296 4-3**

(Refers to Fact Pattern #9)

During the next year, KB-96 sales are expected to be 10,000 units. All of the costs will remain the same except that fixed manufacturing overhead will increase by 20% and direct materials will increase by 10%. The selling price per unit for next year will be \$160. Based on this data, the contribution margin from KB-96 for next year will be

- A. \$620,000
- B. \$750,000
- C. \$1,080,000
- D. \$1,110,000

- Answer (A) is **incorrect**. The amount of \$620,000 includes all fixed costs.
- Answer (B) is **incorrect**. The amount of \$750,000 includes all manufacturing costs.



- Answer (C) is **correct**. Contribution margin equals sales minus variable costs. All variable costs will remain the same except that direct materials will increase to \$22 per unit ( $1.1 \times \$20$ ). Thus, total unit variable costs will be \$52 ( $\$22 + \$15 + \$12 + \$3$ ), and the contribution margin will be \$1,080,000 [10,000 units ( $\$160$  unit selling price – \$52)].
- Answer (D) is **incorrect**. The amount of \$1,110,000 assumes that the fixed costs and shipping and handling are the only relevant costs.

[2] Gleim #: 3.3.54 -- Source: CMA 1292 3-4

In joint-product costing and analysis, which one of the following costs is relevant when deciding the point at which a product should be sold to maximize profits?

- A. Separable costs after the split-off point.
  - B. Joint costs to the split-off point.
  - C. Sales salaries for the period when the units were produced.
  - D. Purchase costs of the materials required for the joint products.
- Answer (A) is **correct**. Joint products are created from processing a common input. Joint costs are incurred prior to the split-off point and cannot be identified with a particular joint product. As a result, joint costs are irrelevant to the timing of sale. However, separable costs incurred after the split-off point are relevant because, if incremental revenues exceed the separable costs, products should be processed further, not sold at the split-off point.
  - Answer (B) is **incorrect**. Joint costs have no effect on the decision as to when to sell a product.
  - Answer (C) is **incorrect**. Sales salaries for the production period do not affect the decision.
  - Answer (D) is **incorrect**. Purchase costs are joint costs.

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**[Fact Pattern #1]**

Petro-Chem, Inc., is a small company that acquires high-grade crude oil from low-volume production wells owned by individuals and small partnerships. The crude oil is processed in a single refinery into Two Oil, Six Oil, and impure distillates. Petro-Chem does not have the technology or capacity to process these products further and sells most of its output each month to major refineries. There were no beginning inventories of finished goods or work-in-process on November 1. The production costs and output of Petro-Chem for November are shown in the next column.

Crude oil acquired and placed in production	\$5,000,000
Direct labor and related costs	2,000,000
Manufacturing overhead	3,000,000
Production and sales	

- Two Oil, 300,000 barrels produced; 80,000 barrels sold at \$20 each.
- Six Oil, 240,000 barrels produced; 120,000 barrels sold at \$30 each.
- Distillates, 120,000 barrels produced and sold at \$15 each.

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**[3] Gleim #: 3.3.55 -- Source: CMA 1295 3-29**

(Refers to Fact Pattern #1)

The portion of Petro-Chem's joint production costs assigned to Six Oil based upon physical output would be

- A. \$3,636,000
- B. \$3,750,000
- C. \$1,818,000
- D. \$7,500,000

- Answer (A) is **correct**. The total production costs incurred are \$10,000,000, consisting of crude oil of \$5,000,000, direct labor of \$2,000,000, and manufacturing overhead of \$3,000,000. The total physical output was 660,000 barrels, consisting of 300,000 barrels of Two Oil, 240,000 barrels of Six Oil, and 120,000 barrels of distillates. Thus, the allocation (rounded) is \$3,636,000  $\{ [240,000 \div (300,000 + 240,000 + 120,000)] \times \$10,000,000 \}$ .
- Answer (B) is **incorrect**. The amount of \$3,750,000 is based on the physical quantity of units sold, not units produced.
- Answer (C) is **incorrect**. The figure of \$1,818,000 is the amount that would be assigned to distillates.

- Answer (D) is **incorrect**. Six Oil does not compose 75% of the total output in barrels.

**[4] Gleim #: 3.3.56 -- Source: CMA 1295 3-30**

(Refers to Fact Pattern #1)

The portion of Petro-Chem's joint production costs assigned to Two Oil based upon the relative sales value of output would be

- A. \$4,800,000
- B. \$4,000,000
- C. \$2,286,000
- D. \$2,500,000

- Answer (A) is **incorrect**. The amount of \$4,800,000 is the amount that would be assigned to Six Oil.
- Answer (B) is **correct**. The total production costs incurred are \$10,000,000, consisting of crude oil of \$5,000,000, direct labor of \$2,000,000, and manufacturing overhead of \$3,000,000. The total value of the output is as follows:

Two Oil (300,000 barrels × \$20)	\$ 6,000,000
Six Oil (240,000 barrels × \$30)	7,200,000
Distillates (120,000 barrels × \$15)	<u>1,800,000</u>
Total sales value	<u><u>\$15,000,000</u></u>

Because Two Oil composes 40% of the total sales value (\$6,000,000 ÷ \$15,000,000), it will be assigned 40% of the \$10,000,000 of joint costs, or \$4,000,000.

- Answer (C) is **incorrect**. The amount of \$2,286,000 is based on the relative sales value of units sold.
- Answer (D) is **incorrect**. The amount of \$2,500,000 is based on the physical quantity of barrels sold.

[5] Gleim #: 3.3.57 -- Source: CMA 1293 3-8

The principal disadvantage of using the physical quantity method of allocating joint costs is that

- A. Costs assigned to inventories may have no relationship to value.
  - B. Physical quantities may be difficult to measure.
  - C. Additional processing costs affect the allocation base.
  - D. Joint costs, by definition, should not be separated on a unit basis.
- Answer (A) is **correct**. Joint costs are most often assigned on the basis of relative sales values or net realizable values. Basing allocations on physical quantities, such as pounds, gallons, etc., is usually not desirable because the costs assigned may have no relationship to value. When large items have low selling prices and small items have high selling prices, the large items might always sell at a loss when physical quantities are used to allocate joint costs.
  - Answer (B) is **incorrect**. Physical quantities are usually easy to measure.
  - Answer (C) is **incorrect**. Additional processing costs will have no more effect on the allocation of joint costs based on physical quantities than any other base.
  - Answer (D) is **incorrect**. The purpose of allocating joint costs, under any method, is to separate such costs on a unit basis.

**[Fact Pattern #2]**

Travis Petroleum is a small company that acquires crude oil and manufactures it into three intermediate products, differing only in grade. The products are Grade One, Grade Two, and Grade Three. No beginning inventories of finished goods or work-in-process existed on November 1. The production costs for November were as follows (assume separable costs were negligible):

Crude oil acquired and put into production	\$4,000,000
Direct labor and related costs	2,000,000
Manufacturing overhead	3,000,000

The output and sales for November were as follows:

	<u>Grade One</u>	<u>Grade Two</u>	<u>Grade Three</u>
Barrels produced	300,000	240,000	120,000
Barrels sold	80,000	120,000	120,000
Prices per barrel sold	\$30	\$40	\$50

**[6] Gleim #: 3.3.58 -- Source: Publisher**

(Refers to Fact Pattern #2)

The portion of Travis' joint production costs assigned to Grade Two based upon physical output is (rounded to the nearest thousand dollars)

- A. \$3,273,000
- B. \$3,375,000
- C. \$1,636,000
- D. \$3,512,000

- Answer (A) is **correct**. Total joint production costs incurred were \$9,000,000 (\$4,000,000 + \$2,000,000 + \$3,000,000). The total physical output was 660,000 barrels (300,000 barrels of Grade One + 240,000 barrels of Grade Two + 120,000 barrels of Grade Three). Thus, on a physical output basis, Grade Two should be allocated \$3,273,000  $[(240,000 \div 660,000) \times \$9,000,000]$ .
- Answer (B) is **incorrect**. The amount of \$3,375,000 is based on the physical quantity of units sold, not units produced.

- Answer (C) is **incorrect**. The amount of \$1,636,000 is the amount assigned to Grade Three.
- Answer (D) is **incorrect**. The amount of \$3,512,000 is the amount assigned to Grade Two if the relative sales value method is used.

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**[Fact Pattern #3]**

Atlas Foods produces the following three supplemental food products simultaneously through a refining process costing \$93,000.

The joint products, Alfa and Betters, have a final selling price of \$4 per pound and \$10 per pound, respectively, after additional processing costs of \$2 per pound of each product are incurred after the split-off point. Morefeed, a by-product, is sold at the split-off point for \$3 per pound.

Alfa	10,000 pounds of Alfa, a popular but relatively rare grain supplement having a caloric value of 4,400 calories per pound
Betters	5,000 pounds of Betters, a flavoring material high in carbohydrates with a caloric value of 11,200 calories per pound
Morefeed	1,000 pounds of Morefeed, used as a cattle feed supplement with a caloric value of 1,000 calories per pound

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**[11] Gleim #: 3.3.63 -- Source: CMA 1293 3-3**

(Refers to Fact Pattern #3)

Assuming Atlas Foods inventories Morefeed, the by-product, the joint cost to be allocated to Alfa using the net realizable value method is

- A. \$3,000
- B. \$30,000
- C. \$31,000
- D. \$60,000

- Answer (A) is **incorrect**. The amount of \$3,000 is the value of the by-product.

- Answer (B) is **correct**. The NRV at split-off for each of the joint products must be determined. Given that Alfa has a \$4 selling price and an additional \$2 of processing costs, the value at the split-off is \$2 per pound. The total value at split-off for 10,000 pounds is \$20,000. Betters has a \$10 selling price and an additional \$2 of processing costs. Thus, the value at split-off is \$8 per pound. The total value of 5,000 pounds of Betters is therefore \$40,000. The 1,000 pounds of Morefeed has a split-off value of \$3 per pound, or \$3,000. Assuming that Morefeed (a by-product) is inventoried (recognized in the accounts when produced) and treated as a reduction of joint costs, the allocable joint cost is \$90,000 (\$93,000 – \$3,000). (NOTE: Several other methods of accounting for by-products are possible.) The total net realizable value of the main products is \$60,000 (\$20,000 Alfa + \$40,000 Betters). The allocation to Alfa is \$30,000 [ $(\$20,000 \div \$60,000) \times \$90,000$ ].
- Answer (C) is **incorrect**. The amount of \$31,000 fails to adjust the joint processing cost for the value of the by-product.
- Answer (D) is **incorrect**. The amount of \$60,000 is the amount allocated to Betters.

**[12] Gleim #: 3.3.64 -- Source: CMA 1293 3-4**

(Refers to Fact Pattern #3)

Assuming Atlas Foods inventories Morefeed, the by-product, the joint cost to be allocated to Alfa, using the physical quantity method is

- A. \$3,000
- B. \$30,000
- C. \$31,000
- D. \$60,000

- Answer (A) is **incorrect**. The figure of \$3,000 is the value of the by-product.
- Answer (B) is **incorrect**. The figure of \$30,000 is based on the net realizable value method.
- Answer (C) is **incorrect**. The figure of \$31,000 is based on the net realizable value method and fails to adjust the joint processing cost for the value of the by-product.
- Answer (D) is **correct**. Joint cost is \$93,000 and Morefeed has a split-off value of \$3,000 (1,000 pounds  $\times$  \$3 split-off value per pound). Assuming the latter amount is treated as a reduction in joint cost, the allocable joint cost is \$90,000. The total physical quantity (volume) of the two joint products is 15,000 pounds (10,000 Alfa + 5,000 Betters). Hence, \$60,000 of the net joint costs [ $(10,000 \div 15,000) \times \$90,000$ ] should be allocated to Alfa.



**[13] Gleim #: 3.3.65 -- Source: CMA 1293 3-5**

(Refers to Fact Pattern #3)

Assuming Atlas Foods inventories Morefeed, the by-product, the joint cost to be allocated to Betters using the weighted-quantity method based on caloric value per pound is

- A. \$39,208
- B. \$39,600
- C. \$40,920
- D. \$50,400

- Answer (A) is **incorrect**. The figure of \$39,208 is the amount allocated to Alfa if the 1,000,000 calories attributable to Morefeed is included in the computation.
- Answer (B) is **incorrect**. The figure of \$39,600 is the allocation to Alfa.
- Answer (C) is **incorrect**. The figure of \$40,920 is the allocation to Alfa if the sales value of the by-product is not treated as a reduction of joint cost.
- Answer (D) is **correct**. The net allocable joint cost is \$90,000, assuming the value of Morefeed is inventoried and treated as a reduction in joint costs. The caloric value of Alfa is 44,000,000 ( $4,400 \times 10,000$  pounds), the caloric value of Betters is 56,000,000 ( $11,200 \times 5,000$  pounds), and the total is 100,000,000. Of this total volume, Alfa makes up 44% and Betters 56%. Thus, \$50,400 ( $\$90,000 \times 56\%$ ) should be allocated to Betters.

**[14] Gleim #: 3.3.66 -- Source: CMA 1293 3-6**

(Refers to Fact Pattern #3)

Assuming Atlas Foods inventories Morefeed, the by-product, and that it incurs no additional processing costs for Alfa and Betters, the joint cost to be allocated to Alfa using the gross market value method is

- A. \$36,000
- B. \$40,000
- C. \$41,333
- D. \$50,000

- Answer (A) is **incorrect**. The amount of \$36,000 is based on 40%, not 4/9.

- Answer (B) is **correct**. The gross market value of Alfa is \$40,000 (10,000 pounds  $\times$  \$4), Better's has a total gross value of \$50,000 (5,000 pounds  $\times$  \$10), and Morefeed has a split-off value of \$3,000. If the value of Morefeed is inventoried and treated as a reduction in joint cost, the allocable joint cost is \$90,000 (\$93,000 – \$3,000). The total gross value of the two main products is \$90,000 (\$40,000 + \$50,000). Of this total value, \$40,000 should be allocated to Alfa  $[(\$40,000 \div \$90,000) \times \$90,000]$ .
- Answer (C) is **incorrect**. The amount of \$41,333 fails to adjust the joint cost by the value of the by-product.
- Answer (D) is **incorrect**. The amount of \$50,000 is the joint cost allocated to Better's.

**[15] Gleim #: 3.3.67 -- Source: CMA 1293 3-7**

(Refers to Fact Pattern #3)

Assuming Atlas Foods does not inventory Morefeed, the by-product, the joint cost to be allocated to Better's using the net realizable value method is

- A. \$30,000
- B. \$31,000
- C. \$52,080
- D. \$62,000

- Answer (A) is **incorrect**. The amount of \$30,000 is the amount allocated to Alfa when the by-product is inventoried.
- Answer (B) is **incorrect**. The amount of \$31,000 is the amount allocated to Alfa when the by-product is not inventoried.
- Answer (C) is **incorrect**. The amount of \$52,080 assumes that a weighting method using caloric value is used.
- Answer (D) is **correct**. The NRV of Alfa is \$20,000 [10,000 pounds  $\times$  (\$4 selling price – \$2 additional processing costs)], and the NRV of Better's is \$40,000 [5,000 pounds  $\times$  (\$10 selling price – \$2 additional processing costs)]. If the joint cost is not adjusted for the value of the by-production, the amount allocated to Better's is \$62,000  $\{[\$40,000 \div (\$20,000 + \$40,000)] \times \$93,000\}$ .

**[16] Gleim #: 3.3.68 -- Source: CMA 1296 3-30**

Lankip Company produces two main products and a by-product out of a joint process. The ratio of output quantities to input quantities of direct material used in the joint process remains consistent from month to month. Lankip has employed the physical-volume method to allocate joint production costs to the two main products. The net realizable value of the by-product is used to reduce the joint production costs before the joint costs are allocated to the main products. Data regarding Lankip's operations for the current month are presented in the chart below. During the month, Lankip incurred joint production costs of \$2,520,000. The main products are not marketable at the split-off point and, thus, have to be processed further.

	First Main Product	Second Main Product	By-product
Monthly output in pounds	90,000	150,000	60,000
Selling price per pound	\$30	\$14	\$2
Separable process costs	\$540,000	\$660,000	

The amount of joint production cost that Lankip would allocate to the Second Main Product by using the physical-volume method to allocate joint production costs would be

- A. \$1,200,000
  - B. \$1,260,000
  - C. \$1,500,000
  - D. \$1,575,000
- Answer (A) is **incorrect**. The amount of \$1,200,000 assumes that the by-product is charged with a portion of the net joint cost.
  - Answer (B) is **incorrect**. The amount of \$1,260,000 assumes that the by-product is charged with a portion of the gross joint cost.
  - Answer (C) is **correct**. The joint cost to be allocated is \$2,400,000 [\$2,520,000 total joint cost – (60,000 pounds of the by-product) × \$2]. Accordingly, the joint cost to be allocated to the Second Main Product on a physical-volume basis is \$1,500,000 {[150,000 pounds ÷ (90,000 pounds + 150,000 pounds) × \$2,400,000]}.
  - Answer (D) is **incorrect**. The amount of \$1,575,000 does not deduct by-product NRV from the joint cost.

**[17] Gleim #: 3.3.69 -- Source: CMA 0205 2-20**

Breegle Company produces three products (B-40, J-60, and H-102) from a single process. Breegle uses the physical volume method to allocate joint costs of \$22,500 per batch to the products. Based on the following information, which product(s) should Breegle continue to process after the split-off point in order to maximize profit?

	<u>B-40</u>	<u>J-60</u>	<u>H-102</u>
Physical units produced per batch	1,500	2,000	3,200
Sales value per unit at split-off	\$10.00	\$4.00	\$7.25
Cost per unit of further processing after split-off	3.05	1.00	2.50
Sales value per unit after further processing	12.25	5.70	9.75

- A. B-40 only.
- B. J-60 only.
- C. H-102 only.
- D. B-40 and H-102.

- Answer (A) is **incorrect**. B-40 generates an incremental loss after further processing.
- Answer (B) is **correct**. The decision to sell-or-process-further is determined by whether the incremental revenue from further processing exceeds the incremental cost. Only J-60 produces an incremental profit.

	<u>B-40</u>	<u>J-60</u>	<u>H-102</u>
Sales value after further processing	\$12.25	\$ 5.70	\$ 9.75
Less: sales value at split-off	<u>(10.00)</u>	<u>(4.00)</u>	<u>(7.25)</u>
Incremental revenue per unit	\$ 2.25	\$ 1.70	\$ 2.50
Less: cost to process further	<u>(3.05)</u>	<u>(1.00)</u>	<u>(2.50)</u>
Incremental profit per unit	<u><u>\$ (0.80)</u></u>	<u><u>\$ 0.70</u></u>	<u><u>\$ 0.00</u></u>

- Answer (C) is **incorrect**. H-102 only breaks even after further processing.
- Answer (D) is **incorrect**. B-40 and H-102 are the products that should not be processed further.

**[19] Gleim #: 3.3.71 -- Source: CMA 0408 2-117**

The primary purpose for allocating common costs to joint products is to determine

- A. The selling price of a by-product.
- B. Whether one of the joint products should be discontinued.
- C. The variance between budgeted and actual common costs.
- D. The inventory cost of joint products for financial reporting.

- Answer (A) is **incorrect**. The selling price of a by-product is determined by market forces outside the manufacturer's control, not by the manufacturer's cost structure.
- Answer (B) is **incorrect**. The decision to discontinue a joint product is based on the incremental profit from that product, not the allocation of common costs.
- Answer (C) is **incorrect**. A variance between budgeted and actual costs is scrutinized regardless of the method of allocating common costs.
- Answer (D) is **correct**. Joint products must be valued for external financial reporting purposes based on the full (absorption) cost of the product. Any common costs attributable to the joint production process must therefore be allocated on a systematic and rational basis.

**[20] Gleim #: 3.3.72 -- Source: CMA 0408 2-118**

The distinction between joint products and by-products is largely dependent on

- A. Historical costs.
- B. Prime costs.
- C. Market value.
- D. Salvage value.

- Answer (A) is **incorrect**. Historical cost is involved in both joint and by-product costing.
- Answer (B) is **incorrect**. Prime costs, that is, direct materials and direct labor, go into every production process; they do not distinguish joint products from by-products.
- Answer (C) is **correct**. A by-product is one of relatively small total value. The first question that must be answered in regard to by-products is: Do the benefits of further processing and bringing them to market exceed the costs; that is, is the incremental revenue worth the effort? Market price determines this. The same can essentially be said for the main products of the production process.
- Answer (D) is **incorrect**. Salvage value of equipment is not a useful criterion when setting prices for an ongoing production process.

**[21] Gleim #: 3.3.73 -- Source: CMA 0408 2-119**

In a production process where joint products are produced, the primary factor that will distinguish a joint product from a by-product is the

- A. Relative total sales value of the products.
- B. Relative total volume of the products.
- C. Relative ease of selling the products.
- D. Accounting method used to allocate joint costs.

- Answer (A) is **correct**. In a production process where joint products are produced, the primary factor that will distinguish a joint product from a by-product is the relative total sales value of the products.
- Answer (B) is **incorrect**. Volume is not always a reliable indicator of cost.
- Answer (C) is **incorrect**. Ease of selling products cannot be objectively measured and so is unsuitable as a basis for assigning costs.
- Answer (D) is **incorrect**. The accounting method cannot aid in distinguishing joint products from by-products.

**[22] Gleim #: 3.3.74 -- Source: CMA 0408 2-120**

All of the following are methods of allocating joint costs to joint products **except**

- A. Physical quantities method.
- B. Net realizable value method.
- C. Separable production cost method.
- D. Gross market value method.

- Answer (A) is **incorrect**. The physical quantities, or physical unit, method is one method of allocating joint costs to joint products.
- Answer (B) is **incorrect**. The net realizable value method is one method of allocating joint costs to joint products.
- Answer (C) is **correct**. No “separable production cost method” is recognized for allocating joint costs. The nature of the problem is such that all costs are joint and cannot be separated.
- Answer (D) is **incorrect**. The gross market value, or sales-value-at-split-off, method is one method of allocating joint costs to joint products.

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**[Fact Pattern #4]**

Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. Big can be processed further into 600 gallons of Giant if \$1,000 of additional processing costs are incurred. Giant can be sold for \$17 per gallon.

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**[23] Gleim #: 3.3.75 -- Source: CMA 0408 2-121**

(Refers to Fact Pattern #4)

If Tucariz uses the net realizable value method to allocate costs to the joint products, the total cost of producing Giant is

- A. \$5,600
- B. \$5,564
- C. \$5,520
- D. \$4,600

- Answer (A) is **correct**. First, the final sales prices are estimated:

Giant: 600 gallons @ \$17/gallon = \$10,200

Mini: 200 gallons @ \$ 4/gallon = \$ 800

From these amounts, separable costs are subtracted:

Giant: \$10,200 – \$1,000 = \$9,200

Mini: No separable costs

This yields a total net realizable value (NRV) for the entire production run of \$10,000 (\$9,200 Giant + \$800 Mini). The next step is to allocate the total joint costs of \$5,000 (\$2,000 input cost + \$3,000 processing cost) based on the proportion of the total NRV represented by each product:

Giant:  $\$5,000 \times (\$9,200 \div \$10,000) = \$4,600$

Mini:  $\$5,000 \times (\$ 800 \div \$10,000) = \$ 400$

The total cost of producing Giant using the estimated NRV method is therefore \$5,600 (\$4,600 allocated joint cost + \$1,000 separable cost).

- Answer (B) is **incorrect**. The amount of \$5,564 is not based on the net realizable value method.

- Answer (C) is **incorrect**. The amount of \$5,520 results from allocating the \$1,000 of additional cost between Giant and Mini; Mini should not absorb any of the additional processing costs.
- Answer (D) is **incorrect**. The amount of \$4,600 is only the allocated joint cost of Giant; it fails to add in the additional \$1,000 of separable costs.

**[24] Gleim #: 3.3.76 -- Source: CMA 0408 2-122**

(Refers to Fact Pattern #4)

If Tucariz uses the sales-value-at-split-off method to allocate joint costs to the final products, the per gallon cost (rounded to the nearest cent) of producing Big is

- A. \$5.63
- B. \$5.00
- C. \$4.50
- D. \$3.38

- Answer (A) is **correct**. First, the final sales prices are estimated:

Big: 800 gallons @ \$9/gallon = \$7,200

Mini: 200 gallons @ \$4/gallon = \$ 800

This yields a total sales value at split-off for the entire production run of \$8,000 (\$7,200 Big + \$800 Mini). The next step is to multiply the joint costs of \$5,000 (\$2,000 input cost + \$3,000 processing cost) based on the proportion of the total final sales value represented by each product:

Big:  $\$5,000 \times (\$7,200 \div \$8,000) = \$4,500$

Mini:  $\$5,000 \times (\$ 800 \div \$8,000) = \$ 500$

The per-unit cost of producing Big using the sales value at split-off method is therefore \$5.63 (\$4,500 allocated joint cost  $\div$  800 gallons).

- Answer (B) is **incorrect**. The amount of \$5.00 results from dividing total joint costs by total output; in other words, a physical-volume method was used rather than the sales value method.
- Answer (C) is **incorrect**. The amount of \$4.50 results from dividing by 1,000 gallons of total output.
- Answer (D) is **incorrect**. The amount of \$3.38 results from allocating only the processing costs rather than the total joint costs.



[25] Gleim #: 3.3.77 -- Source: CMA 0408 2-123

Tempo Company produces three products from a joint process. The three products are sold after further processing as there is no market for any of the products at the split-off point. Joint costs per batch are \$315,000. Other product information is shown below.

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>
Units produced per batch	20,000	30,000	50,000
Further processing and marketing cost per unit	\$ .70	\$3.00	\$1.72
Final sales value per unit	5.00	6.00	7.00

If Tempo uses the net realizable value method of allocating joint costs, how much of the joint costs will be allocated to each unit of Product C?

- A. \$2.10
- B. \$2.65
- C. \$3.15
- D. \$3.78

- Answer (A) is **incorrect**. The amount of \$2.10 results from allocating the \$315,000 equally among all three products.
- Answer (B) is **incorrect**. The amount of \$2.65 results from failing to use the net realizable value method.
- Answer (C) is **incorrect**. The amount of \$3.15 results from dividing total joint costs by total output; in other words, a physical-volume method was used rather than the net realizable value method.

- Answer (D) is **correct**. First, the final sales prices are estimated:

Product A: 20,000 units @ \$5/unit = \$100,000  
 Product B: 30,000 units @ \$6/unit = \$180,000  
 Product C: 50,000 units @ \$7/unit = \$350,000

From these amounts, separable costs are deducted:

Product A: \$100,000 – (20,000 × \$0.70) = \$ 86,000  
 Product B: \$180,000 – (30,000 × \$3.00) = \$ 90,000  
 Product C: \$350,000 – (50,000 × \$1.72) = \$264,000

This yields a total final sales value for the entire production run of \$440,000. Multiply the total joint costs to be allocated by the proportion of the final expected sales of each product:

Product A:	$\$315,000 \times (\$ 86,000 \div \$440,000) =$	\$ 61,568
Product B:	$\$315,000 \times (\$ 90,000 \div \$440,000) =$	\$ 64,432
Product C:	$\$315,000 \times (\$264,000 \div \$440,000) =$	<u>\$189,000</u>
Joint costs -- check total		<u><u>\$315,000</u></u>

The per-unit amount allocated to Product C is therefore \$3.78 (\$189,000 ÷ 50,000).

**[26] Gleim #: 3.3.78 -- Source: CMA 0408 2-124**

Fitzpatrick Corporation uses a joint manufacturing process in the production of two products, Gummo and Xylo. Each batch in the joint manufacturing process yields 5,000 pounds of an intermediate material, Valdene, at a cost of \$20,000. Each batch of Gummo uses 60% of the Valdene and incurs \$10,000 of separate costs. The resulting 3,000 pounds of Gummo sells for \$10 per pound. The remaining Valdene is used in the production of Xylo, which incurs \$12,000 of separable costs per batch. Each batch of Xylo yields 2,000 pounds and sells for \$12 per pound. Fitzpatrick uses the net realizable value method to allocate the joint material costs. The company is debating whether to process Xylo further into a new product, Zinten, which would incur an additional \$4,000 in costs and sell for \$15 per pound. If Zinten is produced, income would increase by

- A. \$2,000
- B. \$5,760
- C. \$14,000
- D. \$26,000

- Answer (A) is **correct**. If Xylo is processed further, the incremental sales revenue will be \$6,000 [2,000 pounds  $\times$  (\$15 – \$12)]. After subtracting the incremental costs, operating income will increase by \$2,000 (\$6,000 – \$4,000).
- Answer (B) is **incorrect**. The amount of \$5,760 results from allocating the \$4,000 rather than assigning it all to Zinten.
- Answer (C) is **incorrect**. The amount of \$14,000 results from adding the additional costs of \$4,000 rather than subtracting them and failing to answer the question about incremental income.
- Answer (D) is **incorrect**. The amount of \$26,000 is the sales revenue of Zinten, less the additional costs.

[1] Gleim #: 3.4.79 -- Source: CMA 1290 3-4

Units of production is an appropriate overhead allocation base when

- A. Several well-differentiated products are manufactured.
  - B. Direct labor costs are low.
  - C. Direct material costs are large relative to direct labor costs incurred.
  - D. Only one product is manufactured.
- Answer (A) is **incorrect**. The number of units of production may have no logical relationship to overhead when several different products are made.
  - Answer (B) is **incorrect**. A low level of direct labor costs means that fixed overhead is substantial, and an appropriate cost driver should be used to make the allocation.
  - Answer (C) is **incorrect**. The allocation should be made on the basis of the appropriate cost drivers without regard to the relationship between direct materials and labor costs.
  - Answer (D) is **correct**. Allocating overhead on the basis of the number of units produced is usually not appropriate. Costs should be allocated on the basis of some plausible relationship between the cost object and the incurrence of the cost, preferably cause and effect. The fixed portion of overhead costs is incurred regardless of the level of production. When multiple products are involved, the number of units of production may bear no relationship to the incurrence of the allocated cost. If overhead is correlated with machine hours but different products require different quantities of that input, the result may be an illogical allocation. However, if a firm manufactures only one product, this allocation method may be acceptable because all costs are to be charged to the single product.

[2] Gleim #: 3.4.80 -- Source: CMA 1296 3-19

Generally, individual departmental rates rather than a plantwide rate for applying manufacturing overhead are used if

- A. A company wants to adopt a standard cost system.
  - B. A company's manufacturing operations are all highly automated.
  - C. Manufacturing overhead is the largest cost component of its product cost.
  - D. The manufactured products differ in the resources consumed from the individual departments in the plant.
- Answer (A) is **incorrect**. A standard cost system can be based on individual or multiple application rates.

- Answer (B) is **incorrect**. Whether production is machine intensive affects the nature but not necessarily the number of cost drivers.
- Answer (C) is **incorrect**. A single plant-wide application rate is acceptable, even with high overhead, if all overhead is highly correlated with a single application base.
- Answer (D) is **correct**. Overhead is usually assigned to products based on a predetermined rate or rates. The activity base for overhead allocation should have a high degree of correlation with the incurrence of overhead. Given only one cost driver, one overhead application rate is sufficient. If products differ in the resources consumed in individual departments, multiple rates are preferable.

**[3] Gleim #: 3.4.81 -- Source: CMA 696 3-21**

The appropriate method for the disposition of underapplied or overapplied overhead of a manufacturer

- A. Is to cost of goods sold only.
  - B. Is to finished goods inventory only.
  - C. Is apportioned to cost of goods sold and finished goods inventory.
  - D. Depends on the significance of the amount.
- Answer (A) is **incorrect**. A material amount should be allocated among cost of goods sold, work-in-process, and finished goods.
  - Answer (B) is **incorrect**. A material amount should be allocated among cost of goods sold, work-in-process, and finished goods.
  - Answer (C) is **incorrect**. A material amount should be allocated among cost of goods sold, work-in-process, and finished goods.
  - Answer (D) is **correct**. Overapplied or underapplied overhead should be disposed of at the end of an accounting period by transferring the balance either to cost of goods sold (if the amount is not material) or to cost of goods sold, finished goods inventory, and work-in-process inventory. Theoretically, the allocation is preferred, but, because the amount is usually immaterial, the entire balance is often transferred directly to cost of goods sold. Thus, the entry depends upon the significance of the amount.

**[Fact Pattern #1]**

Nash Glassworks Company has budgeted fixed manufacturing overhead of \$100,000 per month.

The company uses absorption costing for both external and internal financial reporting purposes. Budgeted overhead rates for cost allocations for the month of April using alternative unit output denominator levels are shown in the next column.

<u>Capacity Levels</u>	<u>Budgeted Denominator Level (units of output)</u>	<u>Budgeted Overhead Cost Rate</u>
Theoretical	1,500,000	\$.0667
Practical	1,250,000	.0800
Normal	775,000	.1290
Master-budget	800,000	.1250

Actual output for the month of April was 800,000 units of glassware.

**[5] Gleim #: 3.4.83 -- Source: CMA 696 3-1**

(Refers to Fact Pattern #1)

When Nash Glassworks Company allocates fixed costs, management will select a capacity level to use as the denominator volume. All of the following are appropriate as the capacity level that approximates actual volume levels **except**

- A. Normal capacity.
- B. Expected annual activity.
- C. Theoretical capacity.
- D. Master-budget capacity.

- Answer (A) is **incorrect**. Normal capacity is the long-term average level of activity that will approximate demand over a period that includes seasonal, cyclical, and trend variations.
- Answer (B) is **incorrect**. Expected annual activity is an approximation of actual volume levels for a specific year.
- Answer (C) is **correct**. Theoretical (ideal) capacity is the maximum capacity given continuous operations with no holidays, downtime, etc. It assumes perfect efficiency at all times. Consequently, it can never be attained and is not a reasonable estimate of actual volume.
- Answer (D) is **incorrect**. Master-budget capacity is the expected level of activity used for budgeting for a given year.

**[6] Gleim #: 3.4.84 -- Source: CMA 0205 2-27**

In determining next year's overhead application rates, a company desires to focus on manufacturing capacity rather than output demand for its products. To derive a realistic application rate, the denominator activity level should be based on

- A. Practical capacity.
- B. Maximum capacity.
- C. Normal capacity.
- D. Master-budget (expected annual) capacity.

- Answer (A) is **correct**. Practical capacity is based on realistic, attainable levels of production and input efficiency and is the most appropriate denominator level to use in selecting an overhead application rate.
- Answer (B) is **incorrect**. Using maximum capacity assumes no downtime, an unrealistic assumption in any case.
- Answer (C) is **incorrect**. Normal capacity may be lower than the equipment is capable of with proper maintenance and attention to efficiency.
- Answer (D) is **incorrect**. Master-budget (expected) capacity cannot be determined until the application base is selected.

**[14] Gleim #: 3.4.92 -- Source: CMA 692 3-6**

Departmental overhead rates are usually preferred to plant-wide overhead rates when

- A. The activities of each of the various departments in the plant are not homogeneous.
- B. The costs of many service departments are being allocated to each of the various departments.
- C. All products passing through the various departments require the same manufacturing effort in each department.
- D. Most of the overhead costs are fixed.

- Answer (A) is **correct**. The activity base for overhead allocation should have a high correlation with the incurrence of overhead. Thus, the activities of various departments are usually more appropriate as activity bases than plant-wide activities, particularly when products and production activities are not homogeneous.
- Answer (B) is **incorrect**. The number of departments is not as important as the relationship between the costs and activity base.
- Answer (C) is **incorrect**. Products require similar manufacturing effort, they are relatively homogeneous, and a plant-wide rate might be adequate.

- Answer (D) is **incorrect**. The degree of variability in costs is not as important as the relationship between activity bases and costs, and the degree to which manufacturing activities are similar for all products.

**[15] Gleim #: 3.4.93 -- Source: CMA 0408 2-098**

Normal costing systems are said to offer a user several distinct benefits when compared with actual costing systems. Which one of the following is **not** a benefit associated with normal costing systems?

- A. More timely costing of jobs and products.
  - B. A smoothing of product costs throughout the period.
  - C. Improved accuracy of job and product costing.
  - D. A more economical way of attaching overhead to a job or product.
- Answer (A) is **incorrect**. More timely costing of jobs and products is one of the benefits of normal costing.
  - Answer (B) is **incorrect**. A smoothing of product costs throughout the period is one of the benefits of normal costing.
  - Answer (C) is **correct**. Normal costing can provide more timely information about job and product costs, and it can helpfully smooth product costs throughout a period, but it cannot in and of itself improve the accuracy of costing.
  - Answer (D) is **incorrect**. Providing a more economical way of attaching overhead to a job or product is one of the benefits of normal costing.



**[16] Gleim #: 3.4.94 -- Source: CMA 0408 2-145**

Henry Manufacturing, which uses direct labor hours to apply overhead to its product line, undertook an extensive renovation and modernization program 2 years ago.

Manufacturing processes were reengineered, considerable automated equipment was acquired, and 60% of the company's nonunion factory workers were terminated. Which of the following statements would apply to the situation at Henry?

- I. The company's factory overhead rate has likely increased.
- II. The use of direct labor hours seems to be appropriate.
- III. Henry will lack the ability to properly determine labor variances.
- IV. Henry has likely reduced its ability to quickly cut costs in order to respond to economic downturns.

- A. I, II, III, and IV.
- B. I and IV only.
- C. II and IV only.
- D. I and III only.

- Answer (A) is **incorrect**. The use of direct labor hours is an inappropriate driver for overhead when a process has been highly automated.
- Answer (B) is **correct**. Henry's overhead rate will almost certainly increase because of all the new equipment that must be depreciated. Also, this heavy investment in new machinery will make it more difficult to quickly cut costs during economic downturns.
- Answer (C) is **incorrect**. The heavy investment in new machinery will make it more difficult to quickly cut costs during economic downturns.
- Answer (D) is **incorrect**. Process reengineering, a high degree of automation, and a reduction in the workforce do not complicate or preclude the calculation of variances.

**[17] Gleim #: 3.4.95 -- Source: CMA 0408 2-148**

The most important criterion in accurate cost allocations is

- A. Using a simple allocation method.
- B. Allocating fixed and variable costs by using the same allocation base.
- C. Using homogeneous cost pools.
- D. Using multiple drivers for each cost pool.

- Answer (A) is **incorrect**. The simplicity of an allocation method is usually inversely proportional to its accuracy in assigning costs.

- Answer (B) is **incorrect**. Using the same allocation base for both fixed and variable costs is almost always a guarantee of inaccurate costing.
- Answer (C) is **correct**. All the cost objects gathered in a cost pool should be similar enough that a single allocation base can be selected that will appropriately allocate all of them.
- Answer (D) is **incorrect**. In a well-designed costing system, a cost pool will have fewer rather than more drivers.

[2] Gleim #: 3.5.97 -- Source: CMA Sample Q3-5

Pane Company uses a job costing system and applies overhead to products on the basis of direct labor cost. Job No. 75, the only job in process on January 1, had the following costs assigned as of that date: direct materials, \$40,000; direct labor, \$80,000; and factory overhead, \$120,000. The following selected costs were incurred during the year:

Traceable to jobs:

Direct materials	\$178,000
Direct labor	<u>345,000</u>
Total	<u><u>\$523,000</u></u>

Not traceable to jobs:

Factory materials and supplies	\$ 46,000
Indirect labor	235,000
Plant maintenance	73,000
Depreciation on factory equipment	29,000
Other factory costs	<u>76,000</u>
Total	<u><u>\$459,000</u></u>

Pane's profit plan for the year included budgeted direct labor of \$320,000 and overhead of \$448,000. Assuming no work-in-process on December 31, Pane's overhead for the year was

- A. \$11,000 overapplied.
- B. \$24,000 overapplied.
- C. \$11,000 underapplied.
- D. \$24,000 underapplied.

- Answer (A) is **incorrect**. The amount of \$11,000 equals the difference between budgeted and actual overhead.
- Answer (B) is **correct**. Pane applies overhead to products on the basis of direct labor cost. The rate is 1.4 (\$448,000 budgeted OH ÷ \$320,000 budgeted DL cost). Thus, \$483,000 (\$345,000 actual DL cost × 1.4) of overhead was applied, of which \$24,000 (\$483,000 – \$459,000 actual OH) was overapplied.
- Answer (C) is **incorrect**. The amount of \$11,000 equals the difference between budgeted and actual overhead.
- Answer (D) is **incorrect**. The overhead was overapplied.

**[Fact Pattern #1]**

Nash Glassworks Company has budgeted fixed manufacturing overhead of \$100,000 per month.

The company uses absorption costing for both external and internal financial reporting purposes. Budgeted overhead rates for cost allocations for the month of April using alternative unit output denominator levels are shown in the next column.

<u>Capacity Levels</u>	<u>Budgeted Denominator Level (units of output)</u>	<u>Budgeted Overhead Cost Rate</u>
Theoretical	1,500,000	\$.0667
Practical	1,250,000	.0800
Normal	775,000	.1290
Master-budget	800,000	.1250

Actual output for the month of April was 800,000 units of glassware.

**[8] Gleim #: 3.5.103 -- Source: CMA 696 3-2**

(Refers to Fact Pattern #1)

The choice of a production volume level as a denominator in the computation of fixed overhead rates can significantly affect reported net income. Which one of the following statements is true for Nash Glassworks Company if its beginning inventory is zero, production exceeded sales, and variances are adjustments to cost of goods sold? The choice of

- A. Practical capacity as the denominator level will result in a lower net income amount than if master-budget capacity is chosen.
- B. Normal capacity as the denominator level will result in a lower net income amount than if any other capacity volume is chosen.
- C. Master-budget capacity as the denominator level will result in a lower net income amount than if theoretical capacity is chosen.
- D. Practical capacity as the denominator level will result in a higher net income amount than if normal capacity is chosen.

- Answer (A) is **correct**. The choice of practical rather than master budget capacity as the denominator level will result in a lower absorption costing net income. Practical capacity is the maximum level at which output is produced efficiently, with an allowance for unavoidable interruptions, for example, for holidays and scheduled maintenance. Because this level will be higher than master-budget (expected) capacity, its use will usually result in the underapplication of fixed overhead. For example, given costs of \$100,000 and master-budget capacity of 800,000 units, \$.125 per unit is the application rate. If practical capacity is 1,250,000 units, the application rate is \$.08 per unit. If actual production is 800,000 units, fixed overhead will not be over- or underapplied given the use of master-budget capacity. However, there will be \$36,000 ( $450,000 \text{ units} \times \$.08$ ) of underapplied fixed overhead if practical capacity is the denominator level. Consequently, given that the beginning inventory is zero and that production exceeded sales, less fixed overhead will be inventoried at the lower practical capacity rate than at the master-budget rate. Thus, master-budget net income will be greater.
- Answer (B) is **incorrect**. A normal capacity rate results in a larger ending inventory and a greater net income than a theoretical or practical capacity rate.
- Answer (C) is **incorrect**. The master-budget rate exceeds the theoretical capacity rate. It results in a greater ending inventory and a greater net income.
- Answer (D) is **incorrect**. A practical capacity rate results in a lower ending inventory and a lower net income than a normal capacity rate.

**[9] Gleim #: 3.5.104 -- Source: CMA 0205 2-21**

A review of the year-end accounting records of Elk Industries discloses the following information:

Raw materials	\$ 80,000
Work-in-process	128,000
Finished goods	272,000
Cost of goods sold	1,120,000

The company's underapplied overhead equals \$133,000. On the basis of this information, Elk's cost of goods sold is most appropriately reported as

- A. \$987,000
- B. \$1,213,100
- C. \$1,218,000
- D. \$1,253,000

- Answer (A) is **incorrect**. The amount of \$987,000 results from improperly subtracting the entire amount of underapplied overhead from the balance of cost of goods sold instead of allocating it across three inventory accounts.
- Answer (B) is **incorrect**. The amount of \$1,213,100 improperly includes raw materials in the allocation base for underapplied overhead.
- Answer (C) is **correct**. Given the amounts involved, \$133,000 is material; thus, over- or underapplied overhead should be allocated to all work-in-process, finished goods, and cost of goods sold. The proportion of the total of these three accounts represented by cost of goods sold is 73.68% [ $\$1,120,000 \div (\$128,000 + \$272,000 + \$1,120,000)$ ]. The amount of underapplied overhead assigned to cost of goods sold is thus \$98,000 ( $\$133,000 \times 73.68\%$ ), making the total reported amount of cost of goods sold \$1,218,000 ( $\$1,120,000 + \$98,000$ ).
- Answer (D) is **incorrect**. The amount of \$1,253,000 results from improperly allocating the entire amount of underapplied overhead to cost of goods sold.

**[10] Gleim #: 3.5.105 -- Source: CMA 0205 2-28**

Wagner Corporation applies factory overhead based upon machine hours. At the beginning of the year, Wagner budgeted factory overhead at \$250,000 and estimated that 100,000 machine hours would be used to make 50,000 units of product. During the year, the company produced 48,000 units using 97,000 machine hours. Actual overhead for the year was \$252,000. Under a standard cost system, the amount of factory overhead applied during the year was

- A. \$240,000
- B. \$242,500
- C. \$250,000
- D. \$252,000

- Answer (A) is **correct**. Wagner's application rate for overhead is \$2.50 per machine hour ( $\$250,000 \text{ budgeted total} \div 100,000 \text{ estimated machine hours}$ ), and each unit of output is estimated to require 2 machine hours ( $100,000 \text{ estimated machine hours} \div 50,000 \text{ units budgeted output}$ ). Under a standard cost system, the amount of overhead applied during the year was therefore \$240,000 ( $48,000 \text{ units actual output} \times \$2.50 \text{ per machine hour application rate} \times 2 \text{ machine hours standard per unit}$ ).
- Answer (B) is **incorrect**. The amount of \$242,500 results from improperly multiplying by 48,500 units of product (half the number of machine hours).
- Answer (C) is **incorrect**. The amount of \$250,000 results from improperly multiplying by the 50,000 budgeted units of product instead of by the 48,000 actual units.
- Answer (D) is **incorrect**. The amount of \$252,000 was the actual overhead incurred.

[Fact Pattern #2]

Madtack Company's beginning and ending inventories for the month of November are

	<u>November 1</u>	<u>November 30</u>
Direct materials	\$ 67,000	\$ 62,000
Work-in-process	145,000	171,000
Finished goods	85,000	78,000

Production data for the month of November follows:

Direct labor	\$200,000
Actual factory overhead	132,000
Direct materials purchased	163,000
Transportation in	4,000
Purchase returns and allowances	2,000

Madtack uses one overhead control account and charges overhead to production at 70% of direct labor cost. The company does not formally recognize over- or underapplied overhead until year end.

[11] Gleim #: 3.5.106 -- Source: CMA 1295 3-23

(Refers to Fact Pattern #2)

Madtack Company's net charge to overhead control for the month of November is

- A. \$8,000 debit, overapplied.
  - B. \$8,000 debit, underapplied.
  - C. \$8,000 credit, overapplied.
  - D. \$8,000 credit, underapplied.
- Answer (A) is **incorrect**. An overapplication of overhead is represented by a credit in the overhead control account.
  - Answer (B) is **incorrect**. The overhead was overapplied for the month.
  - Answer (C) is **correct**. The overhead control account would have been debited for \$132,000 of actual overhead. Credits would have totaled \$140,000 representing 70% of direct labor costs of \$200,000. Hence, the \$140,000 credit exceeds the \$132,000 debit. Overhead was overapplied by \$8,000.
  - Answer (D) is **incorrect**. The overhead was overapplied for the month.

[13] Gleim #: 3.5.108 -- Source: CMA 0408 2-099

From the following budgeted data, calculate the budgeted indirect cost rate that would be used in a normal costing system.

Total direct labor hours	250,000
Total indirect labor hours	50,000
Direct costs	\$10,000,000
Total indirect labor related costs	5,000,000
Total indirect nonlabor related costs	7,000,000

- A. \$20
- B. \$28
- C. \$40
- D. \$48

- Answer (A) is **incorrect**. The amount of \$20 results from improperly using only indirect labor costs in the numerator.
- Answer (B) is **incorrect**. The amount of \$28 results from improperly using only indirect nonlabor costs in the numerator.
- Answer (C) is **incorrect**. The amount of \$40 results from improperly using the total of direct and indirect labor hours as the allocation base.
- Answer (D) is **correct**. Total indirect costs are \$12,000,000 (\$5,000,000 + \$7,000,000). The appropriate allocation base is direct labor hours, since this more closely matches activity level than does indirect labor or the combination of the two. The budgeted indirect cost rate is thus \$48 per direct labor hour (\$12,000,000 ÷ 250,000).



[14] Gleim #: 3.5.109 -- Source: CMA 0408 2-149

Baldwin Printing Company uses a job order costing system and applies overhead based on machine hours. A total of 150,000 machine hours have been budgeted for the year. During the year, an order for 1,000 units was completed and incurred the following:

Direct material costs	\$1,000
Direct labor costs	1,500
Actual overhead	1,980
Machine hours	450

The accountant calculated the inventory cost of this order to be \$4.30 per unit. The annual budgeted overhead in dollars was

- A. \$577,500
- B. \$600,000
- C. \$645,000
- D. \$660,000

- Answer (A) is **incorrect**. The amount of \$577,500 results from treating the .45 units per hour ratio as a cost, deducting it from the total unit cost, then improperly multiplying this total unit cost by the budgeted total machine hours.
- Answer (B) is **correct**. The results from the production run of 1,000 units allow Baldwin to calculate its per-unit costs for materials ( $\$1,000 \div 1,000 \text{ units} = \$1.00$ ) and labor ( $\$1,500 \div 1,000 \text{ units} = \$1.50$ ). Overhead can then be derived as follows:

Total cost per unit	\$4.30
Less: direct materials	(1.00)
Less: direct labor	<u>(1.50)</u>
Overhead per unit	<u><u>\$1.80</u></u>

The number of machine hours required to manufacture a single unit is .45 (450 hours  $\div$  1,000 units). Therefore, \$1.80 represents 45% of the cost of a machine hour ( $\$1.80 \div .45 = \$4.00$ ). Since 150,000 hours were budgeted, total budgeted overhead for the year was \$600,000 (150,000 hours  $\times$  \$4.00 per hour).

- Answer (C) is **incorrect**. The amount of \$645,000 results from simply multiplying total unit cost by the budgeted total machine hours.
- Answer (D) is **incorrect**. The amount of \$660,000 results from allocating overhead based on actual rather than budgeted usage.

**[15] Gleim #: 3.5.110 -- Source: CMA 0408 2-150**

John Sheng, cost accountant at Starlet Co., is developing departmental factory overhead application rates for the company's tooling and fabricating departments. The budgeted overhead for each department and the data for one job are shown below.

	Department:	
	Tooling	Fabricating
Supplies	\$ 850	\$ 200
Supervisor's salaries	1,500	2,000
Indirect labor	1,200	4,880
Depreciation	1,000	5,500
Repairs	4,075	3,540
Total budgeted overhead	<u>\$8,625</u>	<u>\$16,120</u>
Total direct labor hours	460	620
Direct labor hours on Job #231	12	3

Using the departmental overhead application rates, total overhead applied to Job #231 in the Tooling and Fabricating Departments will be

- A. \$225
- B. \$303
- C. \$537
- D. \$671

- Answer (A) is **incorrect**. The amount of \$225 is the allocation for just the Tooling Department.
- Answer (B) is **correct**. Starlet's departmental overhead allocations are determined by the proportion of the total driver expended by each department on this job, as follows:

Tooling:	$\$8,625 \times (12 \div 460)$	=	\$225
Fabricating:	$\$16,120 \times (3 \div 620)$	=	<u>78</u>
Total			<u>\$303</u>

- Answer (C) is **incorrect**. The amount of \$537 results from improperly using 12 hours to allocate the cost of both departments.
- Answer (D) is **incorrect**. The amount of \$671 results from improperly using the combined hours for the two departments to allocate the departmental costs.

**[16] Gleim #: 3.5.111 -- Source: CMA 0408 2-151**

Cynthia Rogers, the cost accountant for Sanford Manufacturing, is preparing a management report that must include an allocation of overhead. Budgeted overhead for each department and the data for one job are shown below.

	Department	
	Tooling	Fabricating
Supplies	\$ 690	\$ 80
Supervisor's salaries	1,400	1,800
Indirect labor	1,000	4,000
Depreciation	1,200	5,200
Repairs	4,400	3,000
Total budgeted overhead	<u>\$8,690</u>	<u>\$14,080</u>
Total direct labor hours	440	640
Direct labor hours on Job #231	10	2

Using the departmental overhead application rates and allocating overhead on the basis of direct labor hours, overhead applied to Job #231 in the Tooling Department would be

- A. \$44.00
- B. \$197.50
- C. \$241.50
- D. \$501.00

- Answer (A) is **incorrect**. The amount of \$44.00 is the allocation for the Fabricating Department.
- Answer (B) is **correct**. Sanford's departmental overhead allocations are determined by the proportion of the total driver expended by each department on this job. Tooling's allocation is \$197.50 [ $\$8,690 \times (10 \div 440)$ ].
- Answer (C) is **incorrect**. The amount of \$241.50 is the total for Tooling and Fabricating combined.
- Answer (D) is **incorrect**. The amount of \$501.00 results from improperly using the combined hours for the two departments to allocate the departmental costs.

[17] Gleim #: 3.5.112 -- Source: CMA 0408 2-152

Patterson Corporation expects to incur \$70,000 of factory overhead and \$60,000 of general and administrative costs next year. Direct labor costs at \$5 per hour are expected to total \$50,000. If factory overhead is to be applied per direct labor hour, how much overhead will be applied to a job incurring 20 hours of direct labor?

- A. \$28
- B. \$120
- C. \$140
- D. \$260

- Answer (A) is **incorrect**. The amount of \$28 results from improperly dividing the true overhead cost by the \$5 per hour direct labor cost.
- Answer (B) is **incorrect**. The amount of \$120 results from improperly including direct labor costs in the allocation.
- Answer (C) is **correct**. Direct labor hours budgeted for next year are 10,000 (\$50,000 total ÷ \$5 per hour). Factory overhead is applied at the rate of \$7 per direct labor hour (\$70,000 ÷ 10,000 hours). A job incurring 20 hours of direct labor will thus be charged with \$140 of overhead (\$7 per direct labor hour × 20 hours).
- Answer (D) is **incorrect**. The amount of \$260 results from including G&A expenses in factory overhead.

[18] Gleim #: 3.5.113 -- Source: CMA 0408 2-058

Using the following budget data for Valley Corporation, which produces only one product, calculate the company's predetermined factory overhead application rate for variable overhead.

Units to be produced	11,000
Units to be sold	10,000
Indirect materials, varying with production	\$ 1,000
Indirect labor, varying with production	10,000
Factory supervisor's salary, incurred regardless of production	20,000
Depreciation on factory building and equipment	30,000
Utilities to operate factory machines	12,000
Security lighting for factory	2,000
Selling, general, and administrative expenses	5,000

- A. \$2.09
- B. \$2.30
- C. \$4.73
- D. \$5.20

- Answer (A) is **correct**. Variable overhead consists of those inputs to the production process that (1) vary with the level of production and (2) cannot be practicably traced to end products. In Valley's case, these include indirect materials (\$1,000), indirect labor (\$10,000), and utilities (\$12,000), for a total of \$23,000. Dividing this amount by the number of units scheduled for production yields a variable overhead application rate of \$2.09 ( $\$23,000 \div 11,000$ ).
- Answer (B) is **incorrect**. The amount of \$2.30 results from dividing total variable overhead by the number of units to be sold rather than the number to be produced.
- Answer (C) is **incorrect**. The amount of \$4.73 results from improperly excluding indirect materials and improperly including the factory supervisor's salary.
- Answer (D) is **incorrect**. The amount of \$5.20 results from improperly excluding indirect materials and improperly including the factory supervisor's salary, then dividing by the number of units to be sold rather than the number to be produced.

**[1] Gleim #: 3.6.114 -- Source: CMA 1292 3-2**

In allocating factory service department costs to producing departments, which one of the following items would most likely be used as an activity base?

- A. Units of product sold.
- B. Salary of service department employees.
- C. Units of electric power consumed.
- D. Direct materials usage.

- Answer (A) is **incorrect**. Making allocations on the basis of units sold may not meet the cause-and-effect criterion.
- Answer (B) is **incorrect**. The salary of service department employees is the cost allocated, not a basis of allocation.
- Answer (C) is **correct**. Service department costs are considered part of factory overhead and should be allocated to the production departments that use the services. A basis reflecting cause and effect should be used to allocate service department costs. For example, the number of kilowatt hours used by each producing department is probably the best allocation base for electricity costs.
- Answer (D) is **incorrect**. Making allocations on the basis of materials usage may not meet the cause-and-effect criterion.

**[2] Gleim #: 3.6.115 -- Source: CMA 689 4-28**

The two most appropriate factors for budgeting manufacturing overhead expenses would be

- A. Machine hours and production volume.
- B. Management judgment and contribution margin.
- C. Management judgment and production volume.
- D. Management judgment and sales dollars.

- Answer (A) is **incorrect**. Machine hours may not be the appropriate activity base. Moreover, some overhead is fixed regardless of the activity base.
- Answer (B) is **incorrect**. The contribution margin can be calculated only after variable costs and sales prices are determined. Some overhead is variable.

- Answer (C) is **correct**. The most important factor in budgeting manufacturing overhead is production volume. Many overhead items have variable costs, and those that are fixed with a relevant range of output may increase if production exceeds that range. The other essential consideration is management's judgment with respect to the nature and amount of costs to be incurred and expectations for production volume. Because overhead is applied based on predetermined rates, accurate judgment is important.
- Answer (D) is **incorrect**. Sales volume (or dollars) is less significant because overhead is based on production volume.

**[3] Gleim #: 3.6.116 -- Source: CMA 1295 3-16**

When allocating service department costs to production departments, the method that does **not** consider different cost behavior patterns is the

- A. Step method.
- B. Reciprocal method.
- C. Direct method.
- D. Single-rate method.

- Answer (A) is **incorrect**. The step method can be used on a single- or dual-rate basis.
- Answer (B) is **incorrect**. The reciprocal method can be used on a single- or dual-rate basis.
- Answer (C) is **incorrect**. The direct method can be used on a single- or dual-rate basis.
- Answer (D) is **correct**. The single-rate method combines fixed and variable costs. However, dual rates are preferable because they allow variable costs to be allocated on a different basis from fixed costs.

**[4] Gleim #: 3.6.117 -- Source: CMA 1290 3-3**

There are several methods for allocating service department costs to the production departments. The method that recognizes service provided by one service department to another but does **not** recognize reciprocal interdepartmental service is the

- A. Direct method.
- B. Variable method.
- C. Reciprocal method.
- D. Step-down method.

- Answer (A) is **incorrect**. The direct method does not make allocations to other service departments.

- Answer (B) is **incorrect**. The term variable method is nonsensical.
- Answer (C) is **incorrect**. The reciprocal method recognizes reciprocal interdepartmental service.
- Answer (D) is **correct**. The three major methods of allocating service department costs, in order of increasing sophistication, are the direct method, the step-down method, and the reciprocal (or simultaneous-equations) method. The direct method is the simplest. It involves allocating all service department costs to production departments without recognizing any service provided by one service department to another. The step-down method is a sequential process that allocates service costs among service as well as production departments. However, once a department's costs have been allocated, no additional allocations are made back to that department. The reciprocal method uses simultaneous equations to recognize mutual services. The latter method is the most complex.

**[6] Gleim #: 3.6.119 -- Source: CMA 1290 3-2**

Allocation of service department costs to the production departments is necessary to

- A. Control costs.
- B. Coordinate production activity.
- C. Determine overhead rates.
- D. Maximize efficiency.

- Answer (A) is **incorrect**. Costs can be controlled by the service departments without allocation. However, allocation encourages cost control by the production departments. If the costs are allocated, managers have an incentive not to use services indiscriminately.
- Answer (B) is **incorrect**. Allocation does not affect the coordination of production activity.
- Answer (C) is **correct**. Service department costs are indirect costs allocated to production departments to better determine overhead rates when the measurement of full (absorption) costs is desired. Overhead should be charged to production on some equitable basis to provide information useful for such purposes as allocation of resources, pricing, measurement of profits, and cost reimbursement.
- Answer (D) is **incorrect**. Allocation of costs has no effect on the efficiency of the provision of services when the department that receives the allocation has no control over the costs being controlled.



**[10] Gleim #: 3.6.123 -- Source: CMA 0408 2-153**

When allocating costs from one department to another, a dual-rate cost-allocation method may be used. The dual-rate cost-allocation method is most useful when

- A. Two or more cost pools are to be allocated.
  - B. Two or more departments' costs are to be allocated.
  - C. Two or more products are produced.
  - D. Costs are separated into variable-cost and fixed-cost subpools.
- Answer (A) is **incorrect**. The dual-rate method is used with exactly two cost pools, one for fixed costs and one for variable costs.
  - Answer (B) is **incorrect**. Use of the dual-rate depends on cost behavior, not the number of departments.
  - Answer (C) is **incorrect**. Use of the dual-rate depends on cost behavior, not the number of products.
  - Answer (D) is **correct**. The dual-rate method of allocating costs from one department to another involves classifying the costs to be allocated into two pools, one variable and one fixed.

**[11] Gleim #: 3.6.124 -- Source: CMA 0408 2-154**

The management of ROX Company wishes to encourage all other departments to use the legal department, as circumstances warrant. To accomplish this, legal department costs should be

- A. Allocated to users on the basis of the actual cost of hours used.
  - B. Allocated to users on the basis of the budgeted cost of actual hours used.
  - C. Allocated to users on the basis of standard cost for the type of service provided.
  - D. Absorbed as a corporate expense.
- Answer (A) is **incorrect**. Any allocation that differentiates among the users will cause the users to examine the cost of the service and might thereby discourage use.
  - Answer (B) is **incorrect**. Any allocation that differentiates among the users will cause the users to examine the cost of the service and might thereby discourage use.
  - Answer (C) is **incorrect**. Any allocation that differentiates among the users will cause the users to examine the cost of the service and might thereby discourage use.
  - Answer (D) is **correct**. The most effective way to encourage more use of a service is to keep the user from having to bear the cost of the service.

[12] Gleim #: 3.6.125 -- Source: CMA 0408 2-155

Jones Tax Company has three divisions – Compliance, Tax Planning, and Financial Consulting. Based on the divisional data presented below, which one of the allocation bases for common company expenses would likely have the **least** negative behavioral impact on the Financial Consulting Division manager?

	<u>Compliance</u>	<u>Tax Planning</u>	<u>Financial Consulting</u>
Revenues	\$4,500,000	\$6,000,000	\$4,500,000
Variable expenses	1,500,000	3,750,000	2,250,000
No. of employees	68	76	56

- A. Revenues.
- B. Contribution margin.
- C. Equal sharing.
- D. Number of employees.

- Answer (A) is **incorrect**. Using revenues would cause the Financial Consulting Division to bear as much of the burden as the Compliance Division.
- Answer (B) is **incorrect**. Contribution margin, while advantageous to the Financial Consulting Division, is not as advantageous as using the number of employees.
- Answer (C) is **incorrect**. Equal sharing would cause the same burden to be laid on the Financial Consulting Division as on the other divisions.
- Answer (D) is **correct**. The Financial Consulting Division has the fewest employees. Using that as the basis for allocation would therefore be the most advantageous.

**[13] Gleim #: 3.6.126 -- Source: CMA 0408 2-157**

Boston Furniture Company manufactures several steel products. It has three production departments: Fabricating, Assembly, and Finishing. The service departments include Maintenance, Material Handling, and Designing. Currently, the company does not allocate service department costs to the production departments. John Baker, who has recently joined the company as the new cost accountant, believes that service department rates should be developed and charged to the production departments for services requested. If the company adopts this new policy, the production department managers would be **least** likely to

- A. Request an excessive amount of service.
- B. Replace outdated and inefficient systems.
- C. Refrain from using necessary services.
- D. Be encouraged to control costs.

- Answer (A) is **correct**. When a user is forced to bear a realistic cost for a service, the user is less likely to use an excessive amount of that service.
- Answer (B) is **incorrect**. Having to bear maintenance costs would be an incentive to replace outdated and inefficient systems.
- Answer (C) is **incorrect**. If a service is necessary, having to bear a realistic cost will not be a barrier.
- Answer (D) is **incorrect**. When a user is forced to bear a cost for a service, the user has an incentive to control costs.

**[14] Gleim #: 3.6.127 -- Source: CMA 0408 2-158**

Cotton Company has two service departments and three operating departments. In allocating service department costs to the operating departments, which of the following three methods (direct, step-down, reciprocal) will result in the same amount of service department costs being allocated to each operating department, regardless of the order in which the service department costs are allocated?

- A. Direct and reciprocal methods only.
- B. Step-down and reciprocal methods only.
- C. Direct and step-down methods only.
- D. Direct method only.

- Answer (A) is **correct**. With the direct and reciprocal methods, the order of allocation is irrelevant. However, under the step-down method, some service department cost is allocated to other service departments before allocation to the operating departments. These first allocations change the proportions of the total constituted by each department.
- Answer (B) is **incorrect**. Under the step-down method, the amounts allocated are affected by the order of allocation.
- Answer (C) is **incorrect**. Under the step-down method, the amounts allocated are affected by the order of allocation.
- Answer (D) is **incorrect**. Order of allocation also does not apply under the reciprocal method.

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**[Fact Pattern #1]**

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the Information Systems Department.

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**[15] Gleim #: 3.6.128 -- Source: CMA 0408 2-159**

(Refers to Fact Pattern #1)

If Wilcox uses the reciprocal method of department allocation, which one of the following departmental allocations would occur? The costs of the

- A. Assembly Department are allocated to the Information Systems Department and the Personnel Department.
  - B. Information Systems Department are allocated to the Machining Department and the costs of the Machining Department are allocated to the Assembly Department.
  - C. Personnel Department are allocated solely to the Information Systems Department.
  - D. Information Systems Department are allocated to the Personnel Department, Machining Department, and Assembly Department.
- Answer (A) is **incorrect**. The costs of production departments are not allocated.
  - Answer (B) is **incorrect**. The costs of production departments are not allocated.

- Answer (C) is **incorrect**. Under the reciprocal method, the costs of support departments are allocated to both production departments and other support departments.
- Answer (D) is **correct**. The reciprocal method is the most complex and the most theoretically sound of the three service department allocation methods. The reciprocal method recognizes services rendered by all service departments to each other as well as to the production departments.

**[16] Gleim #: 3.6.129 -- Source: CMA 0408 2-160**

(Refers to Fact Pattern #1)

If Wilcox uses the step-down method of departmental allocation, which one of the following cost allocations would **not** occur? Some of the costs of the

- A. Personnel Department would be allocated to the Information Systems Department.
- B. Information Systems Department would be allocated to the Personnel Department.
- C. Personnel Department would be allocated to the Assembly Department.
- D. Personnel Department would be allocated to the Assembly Department and the Machining Department.

- Answer (A) is **incorrect**. Personnel would be allocated to Information Systems.
- Answer (B) is **correct**. The step or step-down method allocates some of the costs of services rendered by service departments to each other. The step method derives its name from the procedure involved: The service departments are allocated in order, from the one that provides the most service to other service departments down to the one that provides the least. Since Personnel provides more services than Information Systems, Personnel will be allocated to Information Systems, but not the other way around.
- Answer (C) is **incorrect**. Personnel would be allocated to Assembly.
- Answer (D) is **incorrect**. Personnel would be allocated to both Assembly and Machining.

**[17] Gleim #: 3.6.130 -- Source: CMA 0408 2-164**

(Refers to Fact Pattern #1)

If Wilcox uses the direct method of departmental allocation, which one of the following cost allocations would occur? Some of the costs of the

- A. Personnel Department would be allocated to the Information Systems Department.
- B. Machining Department would be allocated to the Information Systems Department.
- C. Information Systems Department would be allocated to the Assembly Department.
- D. Assembly Department would be allocated to the Machining Department.

- Answer (A) is **incorrect**. The services rendered by service departments to each other are simply allocated to production departments under the direct method.
- Answer (B) is **incorrect**. The costs of production departments are not allocated to service departments under any of the allocation methods.
- Answer (C) is **correct**. The direct method of service department allocation is the simplest. Service department costs are allocated directly to the producing departments without regard for services rendered by service departments to each other. Service department costs are allocated to production departments based on an allocation base appropriate to each service department's function.
- Answer (D) is **incorrect**. The costs of production departments are not allocated to each other under the direct method.

**[18] Gleim #: 3.6.131 -- Source: CMA 0408 2-161**

Render, Inc., has four support departments (maintenance, power, human resources, and legal) and three operating departments. The support departments provide services to the operating departments as well as to the other support departments. The method of allocating the costs of the support departments that best recognizes the mutual services rendered by support departments to other support departments is the

- A. Direct allocation method.
- B. Dual-rate allocation method.
- C. Step-down allocation method.
- D. Reciprocal allocation method.

- Answer (A) is **incorrect**. The direct method of service department allocation, the simplest of the three methods, consists of allocating service department costs directly to the producing departments without regard for services rendered by service departments to each other.
- Answer (B) is **incorrect**. Dual-rate allocation is a term more properly associated with overhead assignment.
- Answer (C) is **incorrect**. The step or step-down method, while more theoretically sound than the direct method, is less sound than the reciprocal method.
- Answer (D) is **correct**. The reciprocal method is the most complex and the most theoretically sound of the three service department allocation methods. The reciprocal method recognizes services rendered by all service departments to each other as well as to the production departments.

**[Fact Pattern #1]**

The managers of Rochester Manufacturing are discussing ways to allocate the cost of service departments, such as Quality Control and Maintenance, to the production departments. To aid them in this discussion, the controller has provided the following information:

	<u>Quality Control</u>	<u>Maintenance</u>	<u>Machining</u>	<u>Assembly</u>	<u>Total</u>
Budgeted overhead costs					
before allocation	\$350,000	\$200,000	\$400,000	\$300,000	\$1,250,000
Budgeted machine hours	--	--	50,000	--	50,000
Budgeted direct labor hours	--	--	--	25,000	25,000
Budgeted hours of service:					
Quality Control	--	7,000	21,000	7,000	35,000
Maintenance	10,000	--	18,000	12,000	40,000

**[2] Gleim #: 3.7.133 -- Source: CMA 691 3-16**

(Refers to Fact Pattern #1)

If Rochester uses the direct method of allocating service department costs, the total service costs allocated to the assembly department would be

- A. \$80,000
- B. \$87,500
- C. \$120,000
- D. \$167,500

- Answer (A) is **incorrect**. The total of the service department costs allocated to the Assembly Department is \$167,500
- Answer (B) is **incorrect**. The total of the service department costs allocated to the Assembly Department is \$167,500
- Answer (C) is **incorrect**. The total of the service department costs allocated to the Assembly Department is \$167,500

- Answer (D) is **correct**. Under the direct method, service department costs are allocated directly to the production departments, with no allocation to other service departments. The total budgeted hours of service by the Quality Control Department to the two production departments is 28,000 (21,000 + 7,000). Given that the Assembly Department is expected to use 25% ( $7,000 \div 28,000$ ) of the total hours budgeted for the production departments, it will absorb 25% of total quality control costs ( $\$350,000 \times 25\% = \$87,500$ ). The total budgeted hours of service by the Maintenance Department to the production departments is 30,000 (18,000 + 12,000). The Assembly Department is expected to use 40% ( $12,000 \div 30,000$ ) of the total maintenance hours budgeted for the production departments. Thus, the Assembly Department will be allocated 40% of the \$200,000 of maintenance costs, or \$80,000. The total service department costs allocated to the Assembly Department is \$167,500 ( $\$87,500 + \$80,000$ ).

**[3] Gleim #: 3.7.134 -- Source: CMA 691 3-17**

(Refers to Fact Pattern #1)

Using the direct method, the total amount of overhead allocated to each machine hour at Rochester would be

- A. \$2.40
- B. \$5.25
- C. \$8.00
- D. \$15.65

- Answer (A) is **incorrect**. The overhead cost per machine hour is \$15.65.
- Answer (B) is **incorrect**. The overhead cost per machine hour is \$15.65.
- Answer (C) is **incorrect**. The overhead cost per machine hour is \$15.65.
- Answer (D) is **correct**. Machining uses 75% ( $21,000 \div 28,000$ ) of the total quality control hours and 60% ( $18,000 \div 30,000$ ) of the total maintenance hours budgeted for the production departments. Under the direct method, it will therefore be allocated \$262,500 ( $\$350,000 \times 75\%$ ) of quality control costs and \$120,000 ( $\$200,000 \times 60\%$ ) of maintenance costs. In addition, Machining is expected to incur another \$400,000 of overhead costs. Thus, the total estimated Machining overhead is \$782,500 ( $\$262,500 + \$120,000 + \$400,000$ ), and the overhead cost per machine hour is \$15.65 ( $\$782,500 \div 50,000$  hours).



**[4] Gleim #: 3.7.135 -- Source: CMA 691 3-19**

(Refers to Fact Pattern #1)

If Rochester uses the step-down method of allocating service costs beginning with quality control, the maintenance costs allocated to the assembly department would be

- A. \$70,000
- B. \$108,000
- C. \$162,000
- D. \$200,000

- Answer (A) is **incorrect**. The Assembly Department will be allocated maintenance costs of \$108,000.
- Answer (B) is **correct**. The step-down method allocates service costs to both service and production departments but does not involve reciprocal allocations among service departments. Accordingly, Quality Control will receive no allocation of maintenance costs. The first step is to allocate quality control costs to the Maintenance Department. Maintenance is expected to use 20% ( $7,000 \div 35,000$ ) of the available quality control hours and will be allocated \$70,000 ( $\$350,000 \times 20\%$ ) of quality control costs. Thus, total allocable maintenance costs equal \$270,000 ( $\$70,000 + \$200,000$ ). The Assembly Department is estimated to use 40% ( $12,000 \div 30,000$ ) of the available maintenance hours. Consequently, it will be allocated maintenance costs of \$108,000 ( $\$270,000 \times 40\%$ ).
- Answer (C) is **incorrect**. The Assembly Department will be allocated maintenance costs of \$108,000.
- Answer (D) is **incorrect**. The Assembly Department will be allocated maintenance costs of \$108,000.

**[5] Gleim #: 3.7.136 -- Source: CMA 691 3-20**

(Refers to Fact Pattern #1)

If Rochester uses the reciprocal method of allocating service costs, the total amount of quality control costs (rounded to the nearest dollar) to be allocated to the other departments would be

- A. \$284,211
- B. \$336,842
- C. \$350,000
- D. \$421,053

- Answer (A) is **incorrect**. The total quality control costs to be allocated equal \$421,053.

- Answer (B) is **incorrect**. The total quality control costs to be allocated equal \$421,053.
- Answer (C) is **incorrect**. The total quality control costs to be allocated equal \$421,053.
- Answer (D) is **correct**. The reciprocal method involves mutual allocations of service costs among service departments. For this purpose, a system of simultaneous equations is necessary. The total costs for the Quality Control Department consist of \$350,000 plus 25% (10,000 hours ÷ 40,000 hours) of maintenance costs. The total costs for the Maintenance Department equal \$200,000 plus 20% (7,000 hours ÷ 35,000 hours) of quality control costs. These relationships can be expressed by the following equations:

$$Q = \$350,000 + .25M$$

$$M = \$200,000 + .2Q$$

To solve for Q, the second equation can be substituted into the first as follows:

$$Q = \$350,000 + .25(\$200,000 + .2Q)$$

$$Q = \$350,000 + \$50,000 + .05Q$$

$$.95Q = \$400,000$$

$$Q = \$421,053$$

**[6] Gleim #: 3.7.137 -- Source: CMA 691 3-18**

(Refers to Fact Pattern #1)

If Rochester decides not to allocate service costs to the production departments, the overhead allocated to each direct labor hour in the Assembly Department would be

- A. \$3.20
- B. \$3.50
- C. \$12.00
- D. \$16.00

- Answer (A) is **incorrect**. The overhead cost applied per direct labor hour will be \$12.
- Answer (B) is **incorrect**. The overhead cost applied per direct labor hour will be \$12.
- Answer (C) is **correct**. With no allocation of service department costs, the only overhead applicable to the Assembly Department is the \$300,000 budgeted for that department. Hence, the overhead cost applied per direct labor hour will be \$12 (\$300,000 budgeted overhead ÷ 25,000 hours).
- Answer (D) is **incorrect**. The overhead cost applied per direct labor hour will be \$12.

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**[Fact Pattern #2]**

Longstreet Company's Photocopying Department provides photocopy services for both Departments A and B and has prepared its total budget using the following information for next year:

Fixed costs	\$100,000
Available capacity	4,000,000 pages
Budgeted usage	
Department A	1,200,000 pages
Department B	2,400,000 pages
Variable cost	\$0.03 per page

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**[7] Gleim #: 3.7.138 -- Source: CMA 697 3-6**

(Refers to Fact Pattern #2)

Assume that Longstreet uses the single-rate method of cost allocation and the allocation base is budgeted usage. How much photocopying cost will be allocated to Department B in the budget year?

- A. \$72,000
- B. \$122,000
- C. \$132,000
- D. \$138,667

- Answer (A) is **incorrect**. The amount of \$72,000 is the variable cost allocation.
- Answer (B) is **incorrect**. The amount of \$122,000 assumes that fixed costs are allocated equally between A and B.
- Answer (C) is **incorrect**. The amount of \$132,000 assumes fixed costs are allocated at a per-page rate based on available capacity ( $\$100,000 \div 4,000,000 \text{ pages} = \$0.025 \text{ per page}$ ), not on budgeted usage ( $\$100,000 \div 3,600,000 \text{ pages} = \$0.0278 \text{ per page}$ ).
- Answer (D) is **correct**. Department B is budgeted to use 66 2/3% of total production ( $2,400,000 \div 3,600,000$ ), so it should be allocated fixed costs of \$66,667 ( $\$100,000 \times 66 \frac{2}{3}\%$ ). The variable cost allocation is \$72,000 ( $2,400,000 \text{ pages} \times \$0.03 \text{ per page}$ ), and the total allocated is therefore \$138,667 ( $\$66,667 + \$72,000$ ).

[8] Gleim #: 3.7.139 -- Source: CMA 697 3-7

(Refers to Fact Pattern #2)

Assume that Longstreet uses the dual-rate cost allocation method, and the allocation basis is budgeted usage for fixed costs and actual usage for variable costs. How much cost would be allocated to Department A during the year if actual usage for Department A is 1,400,000 pages and actual usage for Department B is 2,100,000 pages?

- A. \$42,000
- B. \$72,000
- C. \$75,333
- D. \$82,000

- Answer (A) is **incorrect**. The amount of \$42,000 equals the variable costs allocated to Department A.
- Answer (B) is **incorrect**. The amount of \$72,000 is the allocation to Department B using a single rate.
- Answer (C) is **correct**. Based on budgeted usage, Department A should be allocated 33 1/3%  $[1,200,000 \text{ pages} \div (1,200,000 \text{ pages} + 2,400,000 \text{ pages})]$  of fixed costs, or \$33,333  $(\$100,000 \times 33 \frac{1}{3}\%)$ . The variable costs are allocated at \$.03 per unit for 1,400,000 pages, or \$42,000. The sum of the fixed and variable elements is \$75,333.
- Answer (D) is **incorrect**. The amount of \$82,000 assumes fixed costs are allocated at a per-page rate based on actual usage  $(\$100,000 \div 3,500,000 \text{ pages} = \$.0286 \text{ per page})$ .

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**[Fact Pattern #3]**

M&P Tool has three service departments that support the production area. Outlined below is the estimated overhead by department for the upcoming year:

<u>Service Departments</u>	<u>Estimated Overhead</u>	<u>Number of Employees</u>
Receiving	\$25,000	2
Repair	35,000	2
Tool	10,000	1
<u>Production Departments</u>		
Assembly		25
Bolting		12

The Repair Department supports the greatest number of departments, followed by the Tool Department. Overhead cost is allocated to departments based upon the number of employees.

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**[9] Gleim #: 3.7.140 -- Source: CMA 697 3-8**

(Refers to Fact Pattern #3)

If M&P uses the direct method of allocation, how much of the Repair Department's overhead will be allocated to the Tool Department?

- A. \$0
- B. \$875
- C. \$7,000
- D. \$11,667

- Answer (A) is **correct**. The direct method allocates service department costs directly to the producing departments without recognition of services provided among the service departments. Hence, no service cost is allocated to the Tool Department because it is a service department.
- Answer (B) is **incorrect**. The direct method does not recognize any allocation between or among service departments; only production departments receive cost allocations.
- Answer (C) is **incorrect**. The direct method does not recognize any allocation between or among service departments; only production departments receive cost allocations.
- Answer (D) is **incorrect**. The direct method does not recognize any allocation between or among service departments; only production departments receive cost allocations.

[10] Gleim #: 3.7.141 -- Source: CMA 697 3-9

(Refers to Fact Pattern #3)

If M&P uses the step-down method of allocation, the allocation from the Repair Department to the Tool Department would be

- A. \$0
- B. \$875
- C. \$7,000
- D. \$11,667

- Answer (A) is **incorrect**. Under the step-down method, other service departments share in the allocation of costs.
- Answer (B) is **correct**. Under the step-down method, service costs are allocated to all departments. However, no reciprocal allocations among service departments are performed. The process usually begins with the department that provides the greatest percentage of its services to other service departments. Thus, the Repair Department is the logical starting point. Given that service costs are allocated to each department (service or production) on the basis of its proportion of employees (excluding employees in the allocating department), the allocation of the Repair Department's overhead to the Tool Department is \$875  $\{[1 \text{ employee} \div (1 + 2 + 25 + 12)] \times \$35,000\}$ .
- Answer (C) is **incorrect**. This amount is far greater than could be allocated to a service department with one employee.
- Answer (D) is **incorrect**. This amount is far greater than could be allocated to a service department with one employee.

**[Fact Pattern #4]**

Logo, Inc., has two service departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows:

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
Total		<u><u>9,300</u></u>	<u><u>11,600</u></u>

**[13] Gleim #: 3.7.144 -- Source: CMA 0408 2-162**

(Refers to Fact Pattern #4)

Logo employs the direct method of allocating service department costs. The overhead of the Systems Department would be allocated by dividing the overhead amount by

- A. 1,200 hours.
- B. 8,100 hours.
- C. 9,000 hours.
- D. 9,300 hours.

- Answer (A) is **incorrect**. The number of computer hours used by the service departments is 1,200.
- Answer (B) is **correct**. The direct method of service department allocation is the simplest. Service department costs are allocated directly to the producing departments without regard for services rendered by service departments to each other. Service department costs are allocated to production departments based on an allocation base appropriate to each service department's function. The appropriate allocation base for the Systems Department is computer usage hours. Thus, the denominator for allocating Systems will be the total computer hours used by the production departments ( $3,600 + 1,800 + 2,700 = 8,100$ ).
- Answer (C) is **incorrect**. The number of 9,000 improperly includes the Facilities Department, which would receive no allocation from Systems under the direct method.

- Answer (D) is **incorrect**. The number of 9,300 improperly includes both service departments and production departments.

**[14] Gleim #: 3.7.145 -- Source: CMA 0408 2-165**

(Refers to Fact Pattern #4)

Logo employs the step-down method of allocating service department costs and begins with the Systems Department. Which one of the following correctly denotes the amount of the Systems Department's overhead that would be allocated to the Facilities Department and the Facilities Department's overhead charges that would be allocated to the Machining Department?

	<u>Systems to Facilities</u>	<u>Facilities to Machining</u>
A.	\$0	\$20,000
B.	\$19,355	\$20,578
C.	\$20,000	\$20,000
D.	\$20,000	\$24,000

- Answer (A) is **incorrect**. Under the step-down method, some of the service department costs are allocated to the other service departments.
- Answer (B) is **incorrect**. Allocating \$19,355 to Facilities results from improperly including the Systems Department's hours in the allocation base.
- Answer (C) is **incorrect**. The amount of \$20,000 of Facilities allocated to Machining results from failing to allocate Systems to Facilities first.



- Answer (D) is **correct**. The first step in applying the step-down method is to determine the percentage of the total driver for the first service department that is to be assigned to the other departments:

<u>Allocate Systems:</u>	<u>Computer Hours</u>	<u>% of Total</u>	<u>Amount to Be Allocated</u>	<u>Departmental Allocations</u>
To Facilities	900	10.0%	\$200,000	\$ 20,000
To Machining	3,600	40.0%	200,000	80,000
To Assembly	1,800	20.0%	200,000	40,000
To Finishing	2,700	30.0%	200,000	60,000
Totals	<u>9,000</u>	<u>100.0%</u>		<u>\$200,000</u>

The second step is to allocate the costs of the first service department (\$000 omitted):

	<u>Service Depts.</u>		<u>Production Departments</u>			
	<u>Systems</u>	<u>Facilities</u>	<u>Machining</u>	<u>Assembly</u>	<u>Finishing</u>	<u>Total</u>
Totals before allocation	\$200	\$100	\$400	\$550	\$620	\$1,870
Allocate Sys.	<u>(200)</u>	<u>20</u>	<u>80</u>	<u>40</u>	<u>60</u>	<u>0</u>
Totals after first allocation	<u>\$ 0</u>	<u>\$120</u>	<u>\$480</u>	<u>\$590</u>	<u>\$680</u>	<u>\$1,870</u>

The third step is to determine the percentage of the total driver for the second allocated service department that is to be assigned to each of the remaining departments:

<u>Allocate Facilities:</u>	<u>Square Footage</u>	<u>% of Total</u>	<u>Amount to Be Allocated</u>	<u>Departmental Allocations</u>
To Machining	2,000	20.0%	\$120,000	24,000
To Assembly	3,000	30.0%	120,000	36,000
To Finishing	5,000	50.0%	120,000	60,000
Totals	<u>10,000</u>	<u>100.0%</u>		<u>\$120,000</u>

The final step is to allocate the costs of the second service department:

	<u>Service Dept.</u>	<u>Production Departments</u>			
	<u>Facilities</u>	<u>Machining</u>	<u>Assembly</u>	<u>Finishing</u>	<u>Total</u>
Totals after first allocation	\$120,000	\$480,000	\$590,000	\$680,000	\$1,870,000
Allocate Facil.	<u>(120,000)</u>	<u>24,000</u>	<u>36,000</u>	<u>60,000</u>	<u>0</u>
Totals after 2nd allocation	<u>\$ 0</u>	<u>\$504,000</u>	<u>\$626,000</u>	<u>\$740,000</u>	<u>\$1,870,000</u>

**[Fact Pattern #5]**

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year:

	<u>Support Departments</u>		<u>Operating Departments</u>		
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work finished:					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

**[15] Gleim #: 3.7.146 -- Source: CMA 0408 2-163**

(Refers to Fact Pattern #5)

If Adam uses the step-down method, beginning with the Maintenance Department, to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- A. \$415,526
- B. \$422,750
- C. \$442,053
- D. \$445,000

- Answer (A) is **incorrect**. The amount of \$415,526 results from mixing up the allocation rates to all departments from each service department.
- Answer (B) is **incorrect**. The amount of \$422,750 results from intermixing the allocation rates between the two service departments.

- Answer (C) is **correct**. The first step in applying the step-down method is to determine the percentage of the total driver for the first service department that is to be assigned to the other departments:

<u>Allocate</u>		<u>% of</u>	<u>Amount to be</u>	<u>Departmental</u>
<u>Maintenance:</u>	<u>Proportion</u>	<u>Total</u>	<u>Allocated</u>	<u>Allocations</u>
To Systems	10	10.0%	\$360,000	\$ 36,000
To Machining	50	50.0%	360,000	180,000
To Fabrication	40	40.0%	360,000	144,000
Totals		<u>100.0%</u>		<u>\$360,000</u>

The second step is to allocate the costs of the first service department:

	<u>Service Departments</u>		<u>Production Departments</u>		
	<u>Maint.</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Tot. bef. allocation	\$360,000	\$ 95,000	\$200,000	\$300,000	\$955,000
Allocate Maint.	<u>(360,000)</u>	<u>36,000</u>	<u>180,000</u>	<u>144,000</u>	<u>0</u>
Totals after first allocation	<u>\$ 0</u>	<u>\$131,000</u>	<u>\$380,000</u>	<u>\$444,000</u>	<u>\$955,000</u>

The third step is to determine the percentage of the total driver for the second allocated service department that is to be assigned to each of the remaining departments:

<u>Allocate</u>		<u>% of</u>	<u>Amount to Be</u>	<u>Departmental</u>
<u>Systems:</u>	<u>Proportion</u>	<u>Total</u>	<u>Allocated</u>	<u>Allocations</u>
To Machining	45	47.4%	\$131,000	\$ 62,053
To Fabrication	50	52.6%	131,000	68,947
Totals		<u>100.0%</u>		<u>\$131,000</u>

The final step is to allocate the costs of the second service department:

	<u>Service</u>	<u>Production Departments</u>		
	<u>Department</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Totals after first allocation	\$131,000	\$380,000	\$444,000	\$955,000
Allocate Systems	<u>(131,000)</u>	<u>62,053</u>	<u>68,947</u>	<u>0</u>
Totals after second allocation	<u>\$ 0</u>	<u>\$442,053</u>	<u>\$512,947</u>	<u>\$955,000</u>

- Answer (D) is **incorrect**. The amount of \$445,000 results from improperly allocating half the cost of Systems to each production department or by using the direct method of allocation.

**[16] Gleim #: 3.7.147 -- Source: CMA 0408 2-166**

(Refers to Fact Pattern #5)

If Adam uses the direct method to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- A. \$418,000
- B. \$422,750
- C. \$442,053
- D. \$445,000

- Answer (A) is **incorrect**. The amount of \$418,000 results from multiplying the given percentages (50% of machining and 40% of systems) times the service department costs instead of using proportions, such as 50/90 and 45/95.
- Answer (B) is **incorrect**. The amount of \$422,750 results from using the step-down method but intermixing the starting rates.
- Answer (C) is **incorrect**. The amount of \$442,053 results from applying the step-down method beginning with the maintenance department.

- Answer (D) is **correct**. The first step in applying the direct method is to determine the percentage of the total drivers for the two service departments that are to be assigned to the production departments:

<u>Allocate</u> <u>Maintenance:</u>	<u>Proportion</u>	<u>% of</u> <u>Total</u>	<u>Amount to be</u> <u>Allocated</u>	<u>Departmental</u> <u>Allocations</u>
To Machining	50	55.6%	\$360,000	\$200,000
To Fabrication	40	44.4%	360,000	160,000
Totals		<u>100.0%</u>		<u>\$360,000</u>

<u>Allocate</u> <u>Systems:</u>	<u>Proportion</u>	<u>% of</u> <u>Total</u>	<u>Amount to be</u> <u>Allocated</u>	<u>Departmental</u> <u>Allocations</u>
To Machining	45	47.4%	\$95,000	\$45,000
To Fabrication	50	52.6%	95,000	50,000
Totals		<u>100.0%</u>		<u>\$95,000</u>

The second step is to allocate the costs of the service departments:

	<u>Service Departments</u>		<u>Production Departments</u>		
	<u>Maint.</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Totals before allocation	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Allocate Maintenance	(360,000)	--	200,000	160,000	0
Allocate Systems	--	(95,000)	45,000	50,000	0
Totals after allocation	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$445,000</u>	<u>\$510,000</u>	<u>\$955,000</u>

[1] Gleim #: 4.1.1 -- Source: CMA 1294 4-6

Companies that adopt just-in-time purchasing systems often experience

- A. A reduction in the number of suppliers.
  - B. Fewer deliveries from suppliers.
  - C. A greater need for inspection of goods as the goods arrive.
  - D. Less need for linkage with a vendor's computerized order entry system.
- Answer (A) is **correct**. The objective of JIT is to reduce carrying costs by eliminating inventories and increasing the deliveries made by suppliers. Ideally, shipments of raw materials are received just in time to be incorporated into the manufacturing process. The focus of quality control under JIT is the prevention of quality problems. Quality control is shifted to the supplier. JIT companies typically do not inspect incoming goods; the assumption is that receipts are of perfect quality. Suppliers are limited to those who guarantee perfect quality and prompt delivery.
  - Answer (B) is **incorrect**. More deliveries are needed. Each shipment is smaller.
  - Answer (C) is **incorrect**. In a JIT system, materials are delivered directly to the production line ready for insertion in the finished product.
  - Answer (D) is **incorrect**. The need for communication with the vendor is greater. Orders and deliveries must be made on short notice, sometimes several times a day.

[16] Gleim #: 4.1.16 -- Source: CMA 0205 3-3

Just-in-time production is also called

- A. Kaizen.
  - B. Lean manufacturing.
  - C. Activity-based management.
  - D. Backflush costing.
- Answer (A) is **incorrect**. Kaizen is a Japanese word meaning continuous pursuit of improvement in every aspect of organizational operations.

- Answer (B) is **correct**. To implement a just-in-time (JIT) approach to inventory management and to eliminate waste of materials, labor, factory space, and machine usage, the factory is reorganized to permit what is often called lean production. Plant layout in a JIT-lean production environment is not arranged by functional department or process but by manufacturing cells (work cells). Central support departments are reduced or eliminated, space is saved, fewer and smaller factories may be required, and materials and tools are brought close to the point of use.
- Answer (C) is **incorrect**. Activity-based management is the linkage of product costing and continuous improvement of processes. It redirects and improves the use of resources to increase the value created for customers and other stakeholders.
- Answer (D) is **incorrect**. Backflush costing is utilized with just-in-time production as a planning and control system. Backflush costing is less costly to operate than most traditional costing systems.

[17] Gleim #: 4.1.17 -- Source: CMA 0205 3-4

Which of the following is **not** a correct comparison of a just-in-time system with a traditional system?

<u>Traditional</u>	<u>Just-in-Time</u>
A. Longer lead times	Shorter lead times
B. Inventory is an asset	Inventory is a liability
C. Some scrap tolerated	Zero defects desired
D. Lot size based on immediate need	Lot size based on formulas

- Answer (A) is **incorrect**. The difference in lead times is a correct comparison between the two systems.
- Answer (B) is **incorrect**. Minimization of inventory is a goal of the just-in-time system since many inventory-related activities are viewed as nonvalue-added.
- Answer (C) is **incorrect**. The focus of quality control under a just-in-time system shifts from the discovery of defective parts to the prevention of quality problems. Zero defects are the ultimate goal.
- Answer (D) is **correct**. Lot sizes based on immediate need are typical of just-in-time systems, while lot sizes based on formulas are characteristic of traditional inventory management systems.

[7] Gleim #: 4.2.24 -- Source: CMA 0205 3-5

Starr Company uses material requirements planning (MRP) and manufactures a product with the following product structure tree.

(Refer to Figure FIGURE03\_02\_02\_Q2.)

Starr has just received an order for 100 units of X, the finished product. The company has 20 units of X, 100 units of B, and 50 units of E in inventory. How many units of E must Starr purchase in order to fill the order?

- A. 1,000
- B. 950
- C. 800
- D. 550

- Answer (A) is **incorrect**. Failing to consider the units already in inventory results in 1,000.
- Answer (B) is **incorrect**. Failing to consider the 20 units of X and the 100 units of B results in 950.
- Answer (C) is **incorrect**. Failing to consider the 100 units of B and the 50 units of E already in inventory results in 800.
- Answer (D) is **correct**. Starr already has 20 units of the finished product in inventory so 80 will need to be manufactured to fill this order. The amount of Subunit B that must be purchased is  $[(80 \times 5) - 100 \text{ on hand}] = 300$ . The amount of Subunit E that must be purchased is therefore  $[(300 \times 2) - 50 \text{ on hand}] = 550$ .



[1] Gleim #: 4.3.25 -- Source: CMA 1294 4-2

United Industries manufactures three products at its highly automated factory. The products are very popular, with demand far exceeding the company's ability to supply the marketplace. To maximize profit, management should focus on each product's

- A. Gross margin.
- B. Segment margin.
- C. Contribution margin ratio.
- D. Contribution margin per machine hour.

- Answer (A) is **incorrect**. Focusing on high gross margin products does not maximize profits if those products require an excessive amount of resources.
- Answer (B) is **incorrect**. The company can sell as much of each product as it can produce. Thus, sales are limited by production constraints, e.g., machine hours. The company should therefore seek to maximize its return per unit of the constraint.
- Answer (C) is **incorrect**. The contribution margin ratio is only important as it translates to dollars. A high margin on a low sales volume will not be profitable.
- Answer (D) is **correct**. When demand far exceeds a company's ability to supply the marketplace, management will want to maximize its profits per unit of scarce resource. If the scarce resource is raw materials, the products that provide the greatest contribution margin per unit of raw materials are the products to emphasize. If machine hours are the constraint, profits are maximized by emphasizing the contribution margin per machine hour.

[2] Gleim #: 4.3.26 -- Source: CMA 0205 3-6

Antler, Inc., produces a single product that sells for \$150 per unit. The product is processed through the Cutting and Finishing Departments. Additional data for these departments are as follows:

	Cutting	Finishing
Annual capacity (36,000 direct labor hours available in each department)	180,000 units	135,000 units
Current production rate (annualized)	108,000 units	108,000 units
Fixed manufacturing overhead	\$1,296,000	\$1,944,000
Fixed selling and administrative expense	864,000	1,296,000
Direct materials cost per unit	45	15

The current production rate is the budgeted rate for the entire year. Direct labor employees earn \$20 per hour, and the company has a “no layoff” period in effect. What is the amount of the throughput contribution per unit as computed using the theory of constraints?

- A. \$90.00
- B. \$76.67
- C. \$46.67
- D. \$26.67

- Answer (A) is **correct**. Throughput costing, sometimes called supervariable costing, recognizes only direct materials costs as being truly variable and thus relevant to the calculation of throughput margin (throughput contribution). All other manufacturing costs are ignored because they are considered fixed in the short run. For Antler’s single product, the throughput margin is therefore \$90 (\$150 selling price – \$45 direct materials in Cutting – \$15 direct materials in Finishing).
- Answer (B) is **incorrect**. Labor, overhead, and selling and administrative costs are not considered in the calculation of throughput contribution.
- Answer (C) is **incorrect**. Labor, overhead, and selling and administrative costs are not considered in the calculation of throughput contribution.
- Answer (D) is **incorrect**. Labor, overhead, and selling and administrative costs are not considered in the calculation of throughput contribution.

[3] Gleim #: 4.3.27 -- Source: CMA 0205 3-7

Three of the basic measurements used by the theory of constraints (TOC) are

- A. Gross margin (or gross profit), return on assets, and total sales.
- B. Number of constraints (or subordinates), number of nonconstraints, and operating leverage.
- C. Throughput (or throughput contribution), inventory (or investments), and operational expense.
- D. Fixed manufacturing overhead per unit, fixed general overhead per unit, and unit gross margin (or gross profit).

- Answer (A) is **incorrect**. Gross margin, return on assets, and total sales are used in analyzing a firm's profitability; they are not measurements used in TOC analysis.
- Answer (B) is **incorrect**. Although the number of constraints/nonconstraints is important under the TOC, these numbers are not basic measurements used in TOC analysis. Operating leverage concerns contribution margin, which is not a basic measurement under TOC.
- Answer (C) is **correct**. Theory of constraints (TOC) analysis describes three basic measurements: throughput contribution (sales – direct materials), investments (raw materials; work-in-process; finished goods; R&D costs; and property, plant, and equipment), and operating costs (all costs except direct materials).
- Answer (D) is **incorrect**. These measurements are used under absorption (full) costing, not in TOC analysis.

**[3] Gleim #: 4.4.52 -- Source: CIA, adapted**

Capacity expansion is also referred to as

- A. Market penetration.
- B. Market development.
- C. Product development.
- D. Diversification.

- Answer (A) is **correct**. Market penetration is growth of existing products or development of existing markets. It occurs in mature firms within an industry.
- Answer (B) is **incorrect**. Market development seeks new markets for current products.
- Answer (C) is **incorrect**. Product development is launching new products in existing markets.
- Answer (D) is **incorrect**. Diversification is launching new products for new markets.

**[8] Gleim #: 4.5.60 -- Source: Publisher**

Which of the following is **not** an appropriate time measure for use in process analysis?

- A. Product development time.
- B. Breakeven time.
- C. Customer-response time.
- D. Process value time.

- Answer (A) is **incorrect**. Product development time is a crucial factor in the competitive equation
- Answer (B) is **incorrect**. Breakeven time is a financial measure of product development, and thus is an appropriate time measure for process analysis.
- Answer (C) is **incorrect**. Customer-response time is one of the common time measures for process analysis.
- Answer (D) is **correct**. The three common time measures for process analysis are product development time, breakeven time, and customer-response time. Process value time is not a meaningful term in this context.

**[5] Gleim #: 4.6.65 -- Source: CMA 1295 3-12**

The four categories of costs associated with product quality costs are

- A. External failure, internal failure, prevention, and carrying.
- B. External failure, internal failure, prevention, and appraisal.
- C. External failure, internal failure, training, and appraisal.
- D. Warranty, product liability, training, and appraisal.

- Answer (A) is **incorrect**. Carrying cost is not one of the elements of quality costs.
- Answer (B) is **correct**. IMA's *Management Accounting Glossary* lists four categories of quality costs: prevention, appraisal, internal failure, and external failure (lost opportunity). Costs of prevention include attempts to avoid defective output, including employee training, review of equipment design, preventive maintenance, and evaluation of suppliers. Appraisal costs include quality control programs, inspection, and testing. Internal failure costs are incurred when detection of defective products occurs before shipment, including scrap, rework, tooling changes, and downtime. External failure costs are incurred after the product has been shipped, including the costs associated with warranties, product liability, and customer ill will.
- Answer (C) is **incorrect**. Training costs are not a category of quality costs.
- Answer (D) is **incorrect**. Warranty, product liability, and training are not cost categories identified by IMA's *Management Accounting Glossary*.

**[6] Gleim #: 4.6.66 -- Source: CMA 1296 3-22**

The cost of scrap, rework, and tooling changes in a product quality cost system is categorized as a(n)

- A. Training cost.
- B. External failure cost.
- C. Internal failure cost.
- D. Prevention cost.

- Answer (A) is **incorrect**. Training costs are prevention costs.
- Answer (B) is **incorrect**. The costs of external failure, such as warranty expense, product liability, and customer ill will, arise when problems are discovered after products have been shipped.
- Answer (C) is **correct**. According to IMA's *Management Accounting Glossary*, internal failure costs are incurred when detection of defective products occurs before shipment. Examples of internal failure costs are scrap, rework, tooling changes, and downtime.

- Answer (D) is **incorrect**. Prevention costs are incurred to avoid defective output. Examples include preventive maintenance, employee training, review of equipment design, and evaluation of suppliers.

**[7] Gleim #: 4.6.67 -- Source: CMA 1295 3-14**

The cost of statistical quality control in a product quality cost system is categorized as a(n)

- A. Internal failure cost.
- B. Training cost.
- C. External failure cost.
- D. Appraisal cost.

- Answer (A) is **incorrect**. Internal failure costs arise after poor quality has been found; statistical quality control is designed to detect quality problems.
- Answer (B) is **incorrect**. Statistical quality control is not a training cost.
- Answer (C) is **incorrect**. External failure costs are incurred after the product has been shipped, including the costs associated with warranties, product liability, and customer ill will.
- Answer (D) is **correct**. The following are the four categories of quality costs: prevention, appraisal, internal failure, and external failure (lost opportunity). Appraisal costs include quality control programs, inspection, and testing. However, some authorities regard statistical quality and process control as preventive activities because they not only detect faulty work but also allow for adjustment of processes to avoid future defects.

**[8] Gleim #: 4.6.68 -- Source: CMA 697 3-28**

Listed below are selected line items from the Cost of Quality Report for Watson Products for last month.

<u>Category</u>	<u>Amount</u>
Rework	\$ 725
Equipment maintenance	1,154
Product testing	786
Product repair	695

What is Watson's total prevention and appraisal cost for last month?

- A. \$786
- B. \$1,154
- C. \$1,940
- D. \$2,665

- Answer (A) is **incorrect**. The appraisal cost is \$786.
- Answer (B) is **incorrect**. The prevention cost is \$1,154.
- Answer (C) is **correct**. The costs of prevention and appraisal are conformance costs that serve as financial measures of internal performance. Prevention costs are incurred to prevent defective output. These costs include preventive maintenance, employee training, review of equipment design, and evaluation of suppliers. Appraisal costs are incurred to detect nonconforming output. They embrace such activities as statistical quality control programs, inspection, and testing. The equipment maintenance cost of \$1,154 is a prevention cost. The product testing cost of \$786 is an appraisal cost. Their sum is \$1,940.
- Answer (D) is **incorrect**. The amount of \$2,665 includes rework, an internal failure cost.

**[12] Gleim #: 4.6.72 -- Source: CMA 0408 2-025**

All of the following are examples of benchmarking standards **except**

- A. The performance of the unit during the previous year.
  - B. The best performance of the unit in comparable past periods.
  - C. A comparison with a similar unit within the same company.
  - D. The best performance of a competitor with a similar operation.
- Answer (A) is **correct**. Benchmarking involves setting standards high. Arbitrarily using the unit's prior period performance runs counter to the goal of benchmarking.



- Answer (B) is **incorrect**. Using the unit's best historical performance is an example of benchmarking.
- Answer (C) is **incorrect**. Making a comparison with a similar unit within the same company is an example of benchmarking.
- Answer (D) is **incorrect**. Considering the best performance of a competitor with a similar operation is an example of benchmarking.

**[13] Gleim #: 4.6.73 -- Source: CMA 0408 2-277**

A quality cost report prepared by Dominion, Inc., reveals the following information.

Prevention costs	10%
Appraisal costs	15%
Internal failure costs	20%
External failure costs	<u>55%</u>
Total quality costs	<u>100%</u>

Which one of the following should Dominion emphasize in order to most effectively improve its overall cost of quality performance?

- A. Quality training.
- B. Inspections.
- C. Rework.
- D. Customer support.

- Answer (A) is **correct**. The largest portion of Dominion's total cost of quality is external failure. Quality training, which will result in higher quality awareness on the part of all employees, is the appropriate corrective action. Quality training is a prevention cost, and an increase in prevention should reduce all other cost categories.
- Answer (B) is **incorrect**. Increased inspections will simply raise appraisal costs.
- Answer (C) is **incorrect**. Rework is a non-value-adding activity; increasing it should be avoided.
- Answer (D) is **incorrect**. Increased customer support does not solve the problem of poor quality.



# **PART 1**

# **Financial Planning, Performance and Control**

## **Section C - Performance Management (25% - Levels A, B, and C)**

Section B, Performance Management, is 25% of the exam, another large part. Section B covers Operational Control (management-by-exception approach) in U.7 and Management Control (management-by-objectives approach) in U.8. Factors to be analyzed for control and performance evaluation include revenues, costs, profits, and investment in assets. Variance analysis based on flexible budgets and standard costs is heavily tested, as is responsibility accounting for revenue, cost, contribution, and profit centers. The balanced scorecard is included in this coverage, as are quality considerations.



## Introduction

### PERFORMANCE EVALUATION AND CONTROL

**Performance evaluation** is the process by which managers at all levels gain information about the performance of tasks within the firm and judge that performance against pre established criteria as set out in budgets, plans, and goals. Performance evaluation is applied for each of the three management functions: operations, marketing, and finance.

#### **Operational Control (management-by-exception approach) versus Management Control (management-by-objectives approach)**

**Operational control** means the evaluation of operating level employees by mid-level managers.

Operational control,

- which focuses on detailed short-term performance measures,
- has a management-by-exception approach; that is, it identifies units or individuals whose performance does not comply with expectations so that the problem can be promptly corrected.

#### **Operational Control Issues:**

Standard Costing and Variance Measures (unit 10)

- Analyze performance against operational goals
- Direct Materials Variances
- Direct Labor Variances
- Overhead Variances
- Sales Variances
- Mix and Yield Variances

**CMA EXAM:** For variances you need to be able to both calculate the variances and interpret the information that you get through variance analysis. This will require the memorization of the variance formulas, but also an understanding of what each formula is calculating.

Mathematically, the majority of the questions will come from variance analysis and performance measurement parts of this section. A number of variances are covered, and you need to know not only how to calculate them, but also what they mean and who can affect them. While the variance topic may seem large and overwhelming at first, when it is broken down into its Individual elements it will become easier.

**Management control** refers to the evaluation by upper-level managers of the performance of mid-level managers. Management control focuses on higher- level managers and long-term, strategic issues.

#### **Management control Issues:**

Responsibility Accounting and Performance Measures (unit 11)

- Responsibility Centers
- Contribution and Segment Reporting
- Common Costs
- Transfer Pricing
- Performance measures & Financial Measures(ROI, RI and EVA)
- The Balanced Scorecard



**CMA EXAM:** The performance measurement portions focus on a few performance measures, specifically Return on Investment (ROI) and Residual Income (RI). For these measurements you need to know what they are, how they are calculated and how they are used. You also need to be able to identify the weaknesses that are inherent in each one. Responsibility accounting is the breaking down of costs into those costs that can be controlled by the manager and those that cannot be controlled by the manager. There are a number of different cost classifications and allocation methods within this section that you need to be aware of.

Transfer pricing is a topic that you need to know from both a theoretical standpoint and a numerical one as well. The questions may require you to understand the issues that company faces in establishing the transfer price as well as being able to calculate an acceptable transfer price under certain situations.

The final topic covered in this Section is performance feedback, and more specifically the balanced scorecard, you need to know conceptually what the balanced scorecard is and how it works as well as be familiar with its application.



## STUDY UNIT TEN

# COST AND VARIANCE MEASURES

### Introduction

In Chapter 9, you saw how budgets assist managers in their function as planners. We now turn to how budgets - specifically flexible budgets - are used to evaluate feedback on variances, aiding managers in their control function. Feedback enables managers to compare actual results-that is, what is happening-with planned performance-what should have been happening according to plans. Flexible budgets and variances help managers gain insights into *why* the actual results differ from the planned performance. That "why" is what this chapter is about. Controlling operations assists managers in attaining the budgeted goals they set out to accomplish. Assessing operating results provides feedback to managers and helps them gain insights into the causes that led to the operating results. By learning from the past, managers can control the future.

### The Use of standards

- To set performance expectations,
- evaluate and control operations,
- motivate employees, and encourage efforts toward their goals.
- allows a manager to identify the cost to manufacture and sell a product or provide a service,
- to find causes and attributes of cost overruns or efficient operations, and
- to manage by exception.

### THE USE OF VARIANCES

Each variance we compute is the difference between an amount based on an actual result and the corresponding budgeted amount-that is, the actual amount of something and the amount it was supposed to be according to the budget. The budgeted amount is a point of reference from which comparisons may be made.

- **Variance analysis enables management by exception:** Variance analysis enables management by exception, the practice of giving attention primarily to significant deviations from expectations (whether favorable or unfavorable) and areas not operating as expected (such as a shortfall in sales of a product) and giving less attention to areas operating as expected. Attending to operations not performing within expected limits is likely to yield the best ratio of the benefits of investigation to costs.
  - Benefits of management by exception reporting include reduction in reports production costs, information overload, and unfocused management actions.
- **Variance analysis assigns responsibility:** The purpose of identifying and assigning responsibility for variances is to determine who is likely to have information that will enable management to find solutions. The constructive approach is to promote learning and continuous improvement in manufacturing operations, not to assign blame.
- **Variances will guide managers to seek explanations** and to take early corrective action, ensuring that future operations will be as planned.
- **Sometimes variances suggest a change in strategy.** Excessive defect rates for a new product may suggest a flawed product design. Executives may then want to reevaluate their product strategies.
- **Variances may signify that standards need to be reevaluated.** Management is signaled that corrective action may be needed.



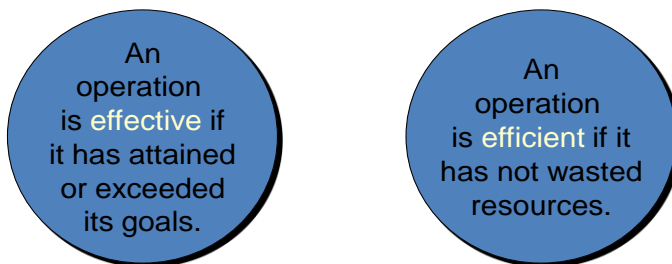
- Variances assist managers in their planning and control decisions.
- Variances used in performance evaluation (discussed in more detail later).

This chapter explores the uses of budgets and standard costing systems in operations. We will start our discussion with comparing actual results with master *static* budget followed by introducing flexible budget.

## EVALUATING OPERATING RESULTS: STATIC BUDGETS AND FLEXIBLE BUDGETS

Two aspects of operations are generally of interest to management in assessing operations: effectiveness in attaining goals and efficiency in carrying out operations.

### Effectiveness and Efficiency



An operation may be **effective but inefficient**, and it may be **efficient but ineffective**.

The master budget, or static budget, discussed in Chapter 2, is based on the level of output planned at the start of the budget period. It's static in the sense that the budget is developed for a single planned output level. When variances are computed from a static budget at the end of the period, adjustments are not made to the budgeted amounts for the actual output level in the budget period.

*A master budget delineates the desired operating results for the period and is a common starting point in assessing the effectiveness of operations.*

### Assessing Effectiveness

**Master budgets** are prepared for a single activity level.

Comparing actual results with the master budget reveals operating income variances.





## Assessing Effectiveness

An important short-term goal for a company is to earn the budgeted operating income for the period. *A company's effectiveness is often measured by comparing the actual amount of operating income earned to the amount in the master budget.*

### Accounting System at Webb

Webb manufactures and sells a designer jacket that requires tailoring and many hand operations. Sales are made to distributors who sell to independent clothing stores and retail chains. Webb's only costs are manufacturing costs; it incurs no costs in other value chain functions such as marketing and distribution. We assume that all units manufactured in April 2011 are sold in April 2011. There are no beginning inventories or ending inventories. Webb has three variable-cost categories. The budgeted variable cost per jacket for each category is

#### Variable Cost

##### Cost Category per Jacket

Direct materials costs	\$60
Direct manufacturing labor costs	16
Variable manufacturing overhead costs	<u>12</u>
Total variable costs	<u>\$88</u>

The *number of units manufactured* is the cost driver for direct materials, direct manufacturing labor, and variable manufacturing overhead. The relevant range for the cost driver is from 0 to 12,000 jackets.

The budgeted fixed manufacturing costs are

for production between 0 and 12,000 jackets. \$276,000

The budgeted selling price is \$120 per jacket.

The static budget for April 2011 is based on selling 12,000 jackets.

Actual sales for April 2011 were 10,000 jackets.

Exhibit 7-1, column 3, presents the static budget for Webb Company for April 2011

In this book, **"level"** followed by a number denotes the amount of detail shown by a variance analysis. Level 0 reports the least detail Level 1 offers more information, and so on. We will use the example of Webb Company to illustrate static budgets and flexible budgets and their related variances.

### Favorable variance vs. unfavorable variance

A favorable variance-denoted F in this book - has the effect of increasing operating income relative to the budgeted amount. For revenue items, F means actual revenues exceed budgeted revenues. For cost items, F means actual costs are less than budgeted costs.

An unfavorable variance-denoted U in this book-has the effect of decreasing operating income relative to the budgeted amount.

The significance of variances depends not only on their amount but also on their direction, frequency, and trend. Moreover,



## STATIC-BUDGET VARIANCES

A static-budget variance is the difference between an actual result and the corresponding budgeted amount in the static budget. Exhibit 7-1 shows the Level 0 and Level 1 variance analyses for April 2011. Level 0 gives the least detailed comparison of the actual and budgeted operating income.

The unfavorable variance of \$93,100 in Exhibit 7-1 for Level 0 is simply the result of subtracting the static-budget operating income of the \$108,000 from the actual operating income of \$14,900:

Static- budget			
variance for	=	Actual	Static- budget
operating income		result	- amount
		= \$14,900	- \$108,000
		= \$93,100, or \$93,100 U	

The difference between the actual operating income and the master *static* budget operating income is the operating income variance--a measure of the effectiveness of the period.

Webb Company was not effective in attaining its goal for the period; its operation fell 86 percent short of its budgeted operating income.

### EXHIBIT 7-1 Static-Budget-Based Variance Analysis for Webb Company for April 2011a

#### LEVEL 0 ANALYSIS

Actual operating income	\$14,000
Budgeted operating income	<u>108,000</u>
Static-budget variance for operating income	<u>\$93,100U</u>

Level 1 analysis in Exhibit 7-1 provides managers with more detailed information on the static-budget variance for operating income of \$93,100 U. The additional information added in Level 1 indicates how each of the line items of operating income \_ revenues, individual variable costs, and fixed costs - add up to the static-budget variance of \$93,100. The budgeted contribution margin percentage of 26.7% decreases to 24.0% for the actual results.

Level 1 Analysis			
	Actual Results (1)	Static-Budget Variances (2) = (1) - (3)	Static Budget (3)
Units sold	<u>10,000</u>	<u>2,000 U</u>	<u>12,000</u>
Revenues	<u>\$ 1,250,000</u>	<u>\$190,000 U</u>	<u>\$1,440,000</u>
Variable costs			
Direct materials	621,600	98,400 F	720,000
Direct manufacturing labor	198,000	6,000 U	192,000
Variable manufacturing overhead	<u>130,500</u>	<u>13,500 F</u>	<u>144,000</u>
Total variable costs	<u>950,100</u>	<u>105,900 F</u>	<u>1,056,000</u>
Contribution margin	<u>299,900</u>	<u>84,100 U</u>	<u>384,000</u>
Fixed costs	<u>285,000</u>	<u>9,000 U</u>	<u>276,000</u>
Operating income	<u>\$ 14,900</u>	<u>\$ 93,100 U</u>	<u>\$ 108,000</u>





a F,= favorable effect on operating income; U = unfavorable effect on operating income.

b Contribution margin percentage =  $\frac{\$299,900}{\$1,250,000} = 24.0\%$

c Contribution margin percentage =  $\frac{\$384,000}{\$1,440,000} = 26.7\%$

In addition to the operating income variance, Exhibit 7-1 reports the difference between the master budget and the actual operating result for each reported item such as units sold, sales, and others. One notable item is the variance that actual sales deviated from the master budget by 2000 units or \$ 190,000-a decrease from the budgeted amount of 16.7percent in units and 13.2 percent in sales dollars.

Exhibit 7-1 also reports that the variable expense incurred in April is \$950,100 less than the budgeted amount-a favorable variance. This comparison probably would lead us to conclude that the primary reason for Webb failure to be effective in earning its budgeted net income is the shortfall in sales. The shortfall is so large that even with a good control of expenses, as evidenced by the substantial favorable variance in variable expenses, the firm still suffers a substantial decrease in operating income and, as a result, failed to be effective in earning the budgeted \$108,000 in operating income .

## Flexible Budget

### The Flexible Budget

The relevant question is . . .

“How much of the favorable cost variance is due to lower activity, and how much is due to good cost control?”

To answer the question, we must **flex** the budget to the actual activity.

A **flexible budget** will help me evaluate efficiency.



## The Flexible Budget

***A flexible budget is a budget that adjusts revenues and expenses for changes in output achieved.***

In this chapter we emphasize flexible budgets. A flexible budget calculates budgeted revenues and budgeted costs based on *the actual output level in the budget period*. A *flexible budget* is calculated at the end of the period when the actual output is known; a *static budget* is *developed at the start of the budget period based on the planned output level* for the period. As we show, a flexible budget enables managers to compute variances that provide more information than the information from variances in a static budget.



## STEPS IN DEVELOPING A FLEXIBLE BUDGET

The flexible budget is prepared at the end of the period (April 2011) after the actual output level of 10,000 jackets is known. The flexible budget is the budget that Webb would have prepared at the start of the budget period had it correctly forecast the actual output level of 10,000 jackets. In preparing the flexible budget:

1. The budgeted selling price is the same \$120 per jacket used in preparing the static budget.
2. The budgeted variable costs are the same \$88 per jacket used in the static budget.
3. The budgeted fixed costs are the same static budget amount of \$276,000 (because the 10,000 jackets produced falls within the relevant range of 0 to 12,000 jackets for which fixed costs are \$276,000).

The *only* difference between the static budget and the flexible budget is that the static budget is prepared for the planned output of 12,000 jackets, whereas the flexible budget is based on the actual output of 10,000 jackets: The static budget is being "flexed" or adapted from 12,000 jackets to 10,000 jackets. In preparing the flexible budget for 10,000 jackets, all costs are assumed to be either variable or fixed with respect to the number of jackets produced.

Webb develops its flexible budget in three steps.

**Step 1: Identify the Actual Quantity of Output.** In April 2011, Webb produced and sold 10,000 jackets.

**Step 2: Calculate the Flexible Budget for Revenues Based on Budgeted Selling Price and Actual Quantity of Output.**

$$\begin{aligned}\text{Flexible-budget revenues} &= \$120 \text{ per jacket} \times 10,000 \text{ jackets} \\ &= \$1,200,000\end{aligned}$$

**Step 3: Calculate the Flexible Budget for Costs Based on Budgeted Variable Cost per Output Unit, Actual Quantity of Output, and Budgeted Fixed Costs.**

Flexible-budget variable costs	
Direct materials, \$60 per jacket x 10,000 jackets	\$ 600,000
Direct manufacturing labor, \$16 per jacket x 10,000 jackets	160,000
Variable manufacturing overhead, \$12 per jacket x 10,000 jackets	<u>120,000</u>
Total flexible-budget variable costs	880,000
Flexible-budget fixed costs	<u>276,000</u>
Flexible-budget total costs	<u><u>\$1,156,000</u></u>

**Question:** If the flexible budget (FB) is based on *actual output*, which isn't known until the end of the period, how can it be a *budget*?

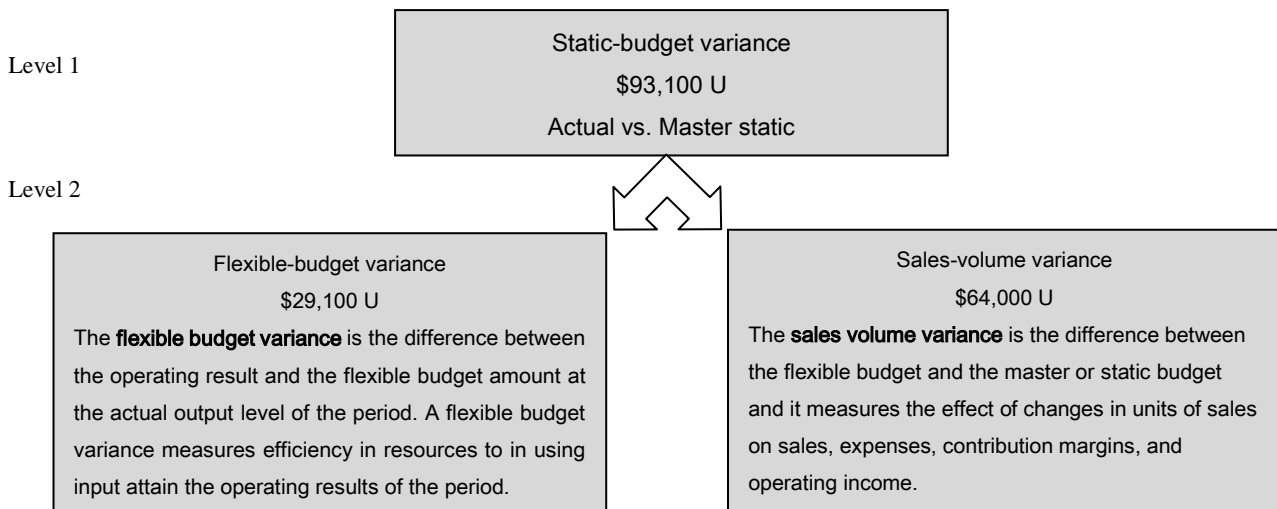
**Answer:** The FB shows the costs that should have been incurred (the budgeted costs) to achieve the actual output level. The FB is the budget we would have made at the beginning of the period if we had perfectly predicted the actual output level.

These three steps enable Webb to prepare a flexible budget as shown in Exhibit 7-2, column 3. Webb uses the flexible budget to move to a Level 2 variance analysis that further subdivides the \$93,100 unfavorable static-budget variance for operating income.

## Assessing Efficiency: FLEXIBLE-BUDGET VARIANCES AND SALES-VOLUME VARIANCES

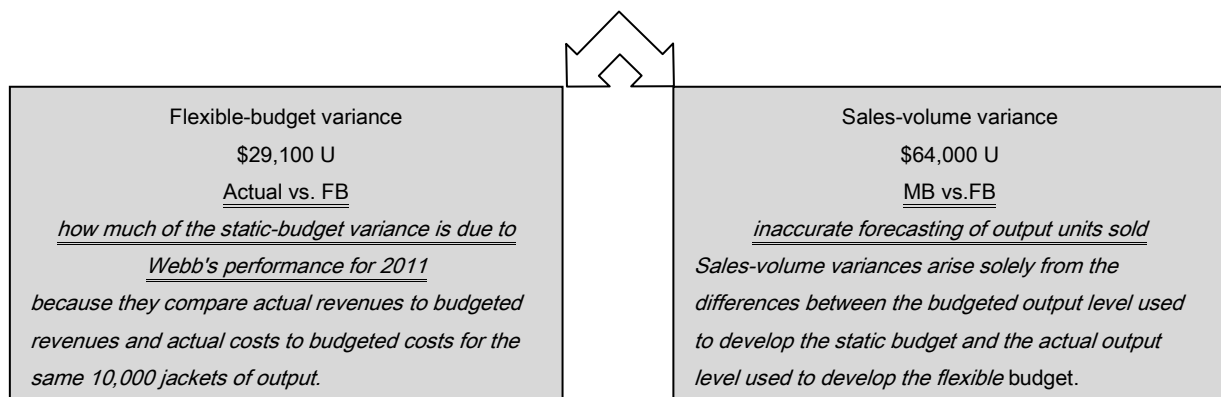
With the help of a flexible budget, we can separate the difference between the operating result and the master budget into two variances: the flexible budget variance and the sales volume variance.

Exhibit7-2 shows the Level 2 flexible-budget-based variance analysis for Webb. The Level 2 variances subdivide the Level 1 \$93,100 unfavorable static-budget variance for operating income into two parts: a flexible-budget variance of \$29,100 U and a sales-volume variance of \$64,000 U.



What useful information comes from subdividing the static-budget variance into its two components?

Remember, Webb actually produced and sold 10,000 jackets, although the static budget had anticipated an output of 12,000 jackets. *Managers would like to know how much of the static-budget variance is due to*



Creating a flexible budget makes it possible for managers to learn these two amounts.




## Sales-Volume Variances

Keep in mind the flexible-budget amounts in column 3 of Exhibit 7-2 and the static budget amounts in column 5 are both computed using budgeted selling prices, budgeted variable cost per jacket, and budgeted fixed costs. The only distinction is that the flexible budget amount is calculated using the actual output level, whereas the static-budget amount is calculated using the budgeted output level. The difference between these two amounts is called the sales-volume variance because it represents the difference caused solely by the difference in the 10,000 actual quantity (or volume) of jackets sold and the 12,000 quantity of jackets expected to be sold in the static budget.

Sales-volume variance for operating income	=	Flexible- budget amount	—	Static- budget amount
=	\$44,000	-	\$108,000	
=	-\$64,000, or \$64,000 U			

In our Webb example, this sales-volume variance for operating income arises solely because of inaccurate forecasting of output units sold: Webb sold only 10,000 jackets, 2,000 fewer than the budgeted 12,000 jackets. Note particularly, budgeted selling price and budgeted variable cost per unit are held constant in computing sales-volume variances. Hence:

Sales volume variance for operating income		= Budgeted CM per unit X (Actual Units sold - static-budget units sold)				
						
Sales volume variance for operating income	=	Budgeted selling price cost per unit	-	Budgeted variable cost per unit	x	Actual units sold - Static-budget units sold
	=	(\$120 per jacket - \$88 per jacket)		x		(10,000 jackets - 12,000 jackets)
	=	\$32 per jacket		x		(-2,000 jackets)
	=	-\$64,000, or \$64,000 U				

Note that the operating income sales volume variance is the same as the contribution margin sales volume variance. This happens because fixed expenses in the master budget and the flexible budget usually do not change. Thus, an alternative way to compute the operating income sales volume variance is to multiply the difference in units of sales actually sold and in the master (static) budget by the master budget contribution margin per unit.

## Sales volume variance Interpretation

Significant sales volume variances can have serious implications for strategic management. A significant unfavorable sales volume variance can indicate that the market is smaller than the level planned when the firm set its strategy and the goal for the period. The firm might need to modify or abandon its strategy.



An insignificant sale volume variance can indicate that the firm's strategy and operating plans are on track to attain its goals. A significant favorable sales volume variance can indicate that the firm needs to pursue a more aggressive strategy or operating goal.

Webb's unfavorable sales-volume variance could be due to one or more of the following:

1. The overall demand for jackets is not growing at the rates that were anticipated.
2. Competitors are taking away market share from Webb.
3. Webb did not adapt quickly to changes in customer preferences and tastes.
4. Quality problems developed that led to customer dissatisfaction with Webb's jackets.
5. Budgeted sales targets were set without careful analysis of market conditions.

How Webb responds to the unfavorable sales-volume variance will be influenced by what is presumed to be the cause of the variance. For example, if Webb believes the variance was caused by market-related reasons (reasons 1 or 2), the sales manager would be in the best position to explain what happened and to suggest corrective actions, such as sales promotions, that may be needed. If however, the unfavorable variance was caused by quality problems, the manufacturing manager would be in the best position to analyze the causes and to suggest strategies for improvement, such as changes in the manufacturing process or investments in new machines

#### Exhibit 7-2

Level 2 Flexible-Budget-Based Variance Analysis for Webb Company for April 2011<sup>a</sup>

Level 2 Analysis					
	Actual Results (1)	Flexible-Budget Variances (2) = (1) – (3)	Flexible Budget (3)	Sales-Volume Variances (4) = (3) – (5)	Static Budget (5)
Units sold	10,000	0	10,000	2,000 U	12,000
Revenues	\$1,250,000	\$50,000 F	\$1,200,000	\$240,000 U	\$1,440,000
Variable costs					
Direct materials	621,600	21,600 U	600,000	120,000 F	720,000
Direct manufacturing labor	198,000	38,000 U	160,000	32,000 F	192,000
Variable manufacturing overhead	130,500	10,500 U	120,000	24,000 F	144,000
Total variable costs	950,100	70,100 U	880,000	176,000 F	1,056,000
Contribution margin	299,900	20,100 U	320,000	64,000 U	384,000
Fixed manufacturing costs	285,000	9,000 U	276,000	0	276,000
Operating income	\$ 14,900	\$29,100 U	\$ 44,000	\$ 64,000 U	\$ 108,000
Level 2		\$29,100 U		\$ 64,000 U	
		Flexible-budget variance		Sales-volume variance	
Level 1			\$93,100 U		
		Static-budget variance			

<sup>a</sup>F = favorable effect on operating income; U = unfavorable effect on operating income.



## Flexible-Budget Variances (Operating Income Flexible Budget Variance)

Operating income flexible budget variances measure efficiencies in operations that are primarily internal to the firm.

Factors contributing to operating income flexible budget variances include

- deviations in selling prices,
- variable costs, and
- Fixed costs.

Management is likely to have controls or influences on these factors. Substantial or continuous unfavorable operating income flexible budget variances can diminish the feasibility of the strategy and jeopardize its continuation.

The first three columns of Exhibit 7-2 compare actual results with flexible-budget amounts. Flexible-budget variances are in column 2 for each line item in the income statement:

$$\text{Flexible- budget Variance} = \text{Actual results} - \text{Flexible- budget amount}$$

The operating income line in Exhibit 7-2 shows the flexible-budget variance is \$29,100 U (\$14,900 - \$44,000). The \$29,100 U arises because actual selling price, variable cost per unit, and fixed costs differ from their budgeted amounts. The actual and budgeted amounts for the selling price and variable cost per unit are

	Actual Amount	Budgeted Amount
Selling price	\$125.00 (\$1,250,000 ÷ 10,000 jackets)	\$120.00 (\$1,200,000 ÷ 10,000 jackets)
Variable cost per jacket	\$ 95.01 (\$ 950,100 ÷ 10,000 jackets)	\$ 88.00 (\$ 880,000 ÷ 10,000 jackets)

## Selling Price variance

The flexible-budget variance for revenues is called the selling-price variance because it arises solely from differences between the actual selling price and the budgeted selling price:

$$\text{Selling-price variance} = \text{Actual selling price} - \text{Budgeted selling price} \times \text{Actual units sold}$$

$$\begin{aligned} &= (\$125 \text{ per jacket} - \$120 \text{ per jacket}) \times 10,000 \text{ jackets} \\ &= \$50,000, \text{ or } \$50,000 \text{ F} \end{aligned}$$



## Variable cost variance

The flexible-budget variance for variable costs is unfavorable for the actual output of 10,000 jackets. It's unfavorable because either

- (a) Webb used more quantities of inputs (such as direct manufacturing labor-hours) relative to the budgeted quantities of inputs, or
- (b) Webb incurred higher prices per unit for the inputs (such as the wage rate per direct manufacturing labor-hour) relative to the budgeted prices per unit for the inputs, or
- (c) both (a) and (b).

Higher input quantities relative to the budget and/or higher input prices relative to the budget could be the result of Webb deciding to produce a superior product to what was planned in the budget, or the result of inefficiencies in Webb's manufacturing and purchasing, or both. *You should always think of variance analysis as providing suggestions for further investigation rather than as establishing conclusive evidence of good or bad performance.*

## Need for Further Analysis of the Variable Expense Flexible Budget Variance

Different factors may drive each of these variances. An aggregated total amount, such as the total variable expense flexible budget variance can mask poor performance in one or more of the cost components or operating divisions, especially when there are offsetting materials, labor and manufacturing overhead

## Fixed cost variance

The actual fixed costs of \$285,000 are \$9,000 more than the budgeted amount of \$276,000. This higher fixed cost decreases operating income, making this flexible-budget variance unfavorable.

## PRICE VARIANCES AND EFFICIENCY VARIANCES FOR DIRECT-COST INPUTS (DM&DL)

We now illustrate how the Level 2 flexible-budget variance for direct-cost inputs can be further subdivided into two more detailed variances, which are Level 3 variances:

1. A price variance that reflects the difference between an actual input price and a budgeted input price
2. An efficiency variance that reflects the difference between an actual input quantity and a budgeted input quantity

Managers generally have more control over efficiency variances than price variances. That's because the quantity of inputs used is primarily affected by factors *inside* the company, whereas price changes are primarily due to market forces *outside* the company.

The information available from these Level 3 variances helps managers better understand past performance and better plan for future performance.





## Obtaining Budgeted Input Price and Budgeted Input Quantities

To calculate price and efficiency variances, Webb needs to obtain budgeted input prices and budgeted input quantities. Webb's three main sources of information are

1. Actual input data from past periods.
2. Data from other companies that have similar processes.
3. Standards developed by Webb

### 1. Actual input data from past periods.

Most companies have past data on actual input prices and actual input quantities. These past prices and quantities could be used as the budgeted prices and quantities in a flexible budget. Past data are typically available at low cost. Nevertheless, there are limitations to using this source of data: (i) past data can include inefficiencies, and (ii) past data do not incorporate any expected changes for the budget period.

### 2. Data from other companies that have similar processes.

The main limitation of using this source is that input price and input quantity data from other companies may not be available.

**3. Standards developed by Webb.** A standard is a carefully determined price, cost, or quantity. A standard is usually expressed on a per unit basis. Consider how Webb determines its standards. Using engineering studies, Webb conducts a detailed breakdown of the steps required to make a jacket.

Each step is assigned a *standard* time based on work performed by a skilled operator using equipment operating in an efficient manner.

There are two advantages of using standard times:

- (i) they aim to exclude past inefficiencies, and
- (ii) they aim to take into account changes expected to occur in the budget period.

An example of (ii) is the decision for leasing of new sewing machines that operate at a faster speed and enable output to be produced with lower defect rates.

### Standards for DM & DL

The standard manufacturing labor cost for each jacket is computed by multiplying the standard time allowed to produce a jacket by the standard wage rate that Webb expects to pay its operators. Similarly, Webb determines the standard quantity of square yards of cloth required by a skilled operator to make each jacket, the standard price per square yard of cloth, and (by multiplying them together) the standard direct material cost of a jacket.

The term "standard" refers to many different things. Always clarify its meaning and how it is being used.

- **A standard input** is a carefully determined quantity of input - such as square yards of cloth or direct manufacturing labor-hours - required for one unit of output, such as a jacket.
- **A standard price** is a carefully determined price that a company expects to pay for a unit of input. In the Webb example, the standard wage rate is an example of a standard price of a direct manufacturing labor-hour.
- **A standard cost** is a carefully determined cost of a unit of output - for example the standard direct manufacturing labor cost of a jacket at Webb.





Standard cost per <b>output</b> unit for each variable direct-cost input	=	Standard input allowed for one output unit	X	Standard price per unit input unit
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Standard cost per <b>jacket</b> for each variable direct-cost input	=	Standard input allowed for one output unit	x	Standard price per input unit
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**Standard direct material cost per jacket:** 2 square yards of cloth input allowed per output unit (jacket) manufactured, at \$30 standard price per square yard

Standard direct material cost per jacket =	2 square yards x	\$30 per square yard =	\$60
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**Standard direct manufacturing labor cost per jacket:** 0.8 manufacturing labor-hour of input allowed per output unit manufactured, at \$20 standard price per hour.

Standard direct manufacturing labor cost per jacket =	0.8 hour	x	\$20 per hour =	\$16
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## "Budget" vs. "Standard"

How are the words "budget" and "standard" related? Budget is the broader term. As the description above indicates, budgeted input prices, budgeted input quantities, and budgeted costs need not be based on standards. However, when standards are used to obtain budgeted input quantities and budgeted input prices, the terms "standard" and "budget" mean the same thing and are used interchangeably. In its standard costing system, Webb uses standards that are attainable through efficient operations but allow for normal disruptions.

## Data for Calculating Webb's Price Variances and Efficiency Variances

Consider Webb's two direct-cost categories. The actual cost for each of these categories for the 10,000 jackets manufactured and sold in April 2011 is

### Direct material purchased and used

1. Square yards of cloth input purchased and used	22,200
2. Actual price incurred per square yard	\$28
3. Direct material costs (22,200 x \$28) [Exhibit 7-2, column 1]	\$621,600

### Direct manufacturing labor

1. Direct manufacturing labor-hours	9,000
2. Actual price incurred per direct manufacturing labor-hour	\$22
3. Direct manufacturing labor costs (9,000 x \$22) [Exhibit 7-2, column 1]	\$198,000

### Price variance vs. Efficiency variance

- A **price variance** is the difference between the actual price and the budgeted price multiplied by the actual quantity of input, such as direct material purchased or used.
  - A price variance is sometimes called an **input-price variance or rate variance**, especially when referring to a price variance for direct labor.
- An **efficiency variance** is the difference between the actual quantity of input used - such as square yards of cloth of direct materials - and the budgeted quantity of input that should have been used to produce the actual output, multiplied by the budgeted price.
  - An efficiency variance is sometimes called a **usage variance**.



**Exhibit 7-3**

Columnar Presentation of Variance Analysis: Direct Costs for Webb Company for April 2011<sup>a</sup>

Level 3 Analysis			
	Actual Costs Incurred (Actual Input Quantity × Actual Price) (1)	Actual Input Quantity × Budgeted Price (2)	Flexible Budget (Budgeted Input Quantity Allowed for Actual Output × Budgeted Price) (3)
Direct Materials	(22,200 sq. yds. × \$28/sq. yd.) \$621,600	(22,200 sq. yds. × \$30/sq. yd.) \$666,000	(10,000 units × 2 sq. yds./unit × \$30/sq. yd.) \$600,000
Level 3		\$44,400 F Price variance	\$66,000 U Efficiency variance
Level 2			\$21,600 U Flexible-budget variance
Direct Manufacturing Labor	9,000 hours × \$22/hr. \$198,000	9,000 hours × \$20/hr. \$180,000	10,000 units × 0.8 hr./unit × \$20/hr. \$160,000
Level 3		\$18,000 U Price variance	\$20,000 U Efficiency variance
Level 2			\$38,000 U Flexible-budget variance

<sup>a</sup>F = favorable effect on operating income; U = unfavorable effect on operating income.

Exhibit 7-3 shows how the price variance and the efficiency variance subdivide the flexible budget variance.

Consider the panel for direct materials.

- The direct material **flexible-budget variance** of \$21,600 U is the difference between the actual costs incurred (actual input quantity x actual price) shown in column 1 and the flexible budget (budgeted input quantity allowed for actual output x budgeted price) shown in column 3.
  - Column 2 (actual input quantity x budgeted price) is inserted between column 1 and column 3. The difference between columns 1 and 2 is the **price variance of \$44,400 F** because the same actual input quantity is multiplied by the *actual price* in column 1 and the *budgeted price* in column 2.
  - The difference between columns 2 and 3 is the efficiency variance of \$66,000 U because the same budgeted price is multiplied by the *actual input quantity* in column 2 and the *budgeted input quantity allowed for actual output* in column 3. See how the direct material price variance, \$44,400 F, plus the direct material **efficiency variance, \$66,000 U**, equals the direct material flexible-budget variance, \$21,600 U.

We next discuss the price variances and the efficiency variances in greater detail.

## Price Variances

The formula for computing the price variance is

Price variance	=	(Actual price of input – Budgeted (Std) price of input)	X	Actual quantity of input
DM Price variance	=	( AP – SP )	x	AQ
DL Price variance	=	( AR – SR )	x	AH

AP: Actual Price, AR : Actual Rate, SP: Std. Price, SR: Std Rate, AQ: Actual Quantity, AH: Actual Hours.



$$\text{Price variance} = \left( \frac{\text{Actual price of input} - \text{Budgeted price of input}}{\text{of input}} \right) \times \text{Actual quantity of input}$$

Price variances for Webb's two direct-cost categories are as follows:

Direct-Cost Category	$\left( \frac{\text{Actual price of input} - \text{Budgeted price of input}}{\text{of input}} \right) \times$	Actual quantity of input	= Price Variance
Direct materials	$(\$28 \text{ per sq. yard} - \$30 \text{ per sq. yard}) \times$	22,200 square yards	= \$44,400 F
Direct manufacturing labor	$(\$22 \text{ per hour} - \$20 \text{ per hour}) \times$	9,000 hours	= \$18,000 U

### Interpreting the Direct material price variance

Possible causes of a favorable direct materials price variance are:

For example, Webb's favorable direct material price variance could be due to one or more of the following:

- An unexpected price change for the materials, changes in freight costs, variation in grades of the purchased items, rush orders, or other causes.
- Webb's purchasing manager negotiated the direct material price more skillfully than was planned for in the budget.
- The purchasing manager changed to a lower-price supplier.
- Webb's purchasing manager bought in larger quantities than the quantities budgeted, thereby obtaining quantity discounts.
- Direct material prices decreased unexpectedly due to, say, industry oversupply.
- Budgeted purchase prices for direct material were set without careful analysis of market conditions.
- The purchasing manager received unfavorable terms on factors other than price (such as lower quality material).

### Responsibility of the variance

Generally speaking, the **purchasing department** is often the office most likely to provide an explanation or the responsibility for materials price variances, as the purchasing manager has control over the price paid for goods.

However, someone other than the purchasing manager could be responsible for a material price variance.

Production may be scheduled in such a way, for example, that the purchasing manager must request express delivery. In these cases the **production manager** should be held responsible for the resulting price variance.

### Company's response

How Webb responds to a material price variance will be vitally affected by what is presumed to be the cause of the variance. Assume Webb's managers attribute the favorable variance to the purchasing manager ordering in larger quantities than budgeted, thereby receiving quantity discounts. Webb could examine if purchasing in these larger quantities resulted in higher storage costs. If the increase in storage and inventory holding costs exceeds the quantity discounts, purchasing in larger quantities is not beneficial. For this reason some companies have reduced their materials storage to prevent their purchasing managers from ordering in larger quantities.



## Interpreting the Direct labor Rate Variance

Possible causes of an unfavorable direct labor price variance are:

- Different rate for example a increase in labor rates, The firm's inability to pay the same hourly wage as specified in the standard cost sheet.
- Different labor skills, the firm's inability to use the same skill-level workers as specified in the standard cost sheet.
- The standard being set without detailed analysis of labor compensation.

## Responsibility of the variance

The **personnel department** usually is responsible for direct labor rate variances. **Production supervisors**, however, could be responsible for the variance if it chooses to use employees with a different skill level than that specified in the standard cost sheet.

## Efficiency Variance

For any actual level of output, the *efficiency variance* is the difference between the input that was actually used and the input that should have been used to produce the actual output, holding input price constant at the budgeted price:

Efficiency Variance =	Actual quantity of input used	-	Budgeted quantity of input allowed for actual output	X	Budgeted (std) price of input
DM Quantity (Efficiency) Variance		= (AQ -	SQ)	X	SP
DL Efficiency Variance		= (AH -	SH)	X	SR

The idea here is that a company is inefficient if it uses a larger quantity of input than the budgeted quantity for the actual output units produced; the company is efficient if it uses fewer inputs than budgeted for the actual output units produced.

$$\text{Efficiency Variance} = \left( \frac{\text{Actual quantity of input used} - \text{Budgeted quantity of input allowed for actual output}}{\text{input used}} \right) \times \text{Budgeted price of input}$$

The efficiency variances for each of Webb's direct-cost categories are

Direct-Cost Category	$\left( \frac{\text{Actual quantity of input used} - \text{Budgeted quantity of input allowed for actual output}}{\text{input used}} \right)$	$\times$	Budgeted price of input	=	Efficiency Variance
Direct materials	[22,200 sq. yds. - (10,000 units $\times$ 2 sq. yds./unit)] = (22,200 sq. yds. - 20,000 sq. yds.)	$\times$	\$30 per sq. yard		
		$\times$	\$30 per sq. yard	=	\$66,000 U
Direct manufacturing labor	[9,000 hours - (10,000 units $\times$ 0.8 hour/unit)] = (9,000 hours - 8,000 hours)	$\times$	\$20 per hour		
		$\times$	\$20 per hour	=	20,000 U



**Note: distinguish inputs from output**

The flexible budget for inputs is based on the budgeted quantity of inputs allowed for actual output level (BOIA). To understand BQIA in the Webb example, distinguish inputs (square yards of cloth, direct manufacturing labor-hours) from output (jackets). BQIA is computed by multiplying the actual quantity of output produced times how much of each input should have been used per output unit.

## General conclusion

The two manufacturing efficiency variances - direct material efficiency variance and direct manufacturing labor efficiency variance - are unfavorable because more input was used than was budgeted, resulting in a decrease in operating income.

## Interpreting the Direct Materials Usage (quantity) Variance

- Using faulty machines or other production factors,
- Using Inferior material quality or substitutions of the material for other materials
- Inadequate training or inexperienced employees,
- Poor supervision

## Responsibility of the variance

Generally speaking, it is the responsibility of the **production department** to see that material usage is kept in line with standards. There may be times, however, when the **purchasing department** is responsible for an unfavorable material usage (quantity) variance by buying inferior material.

## Interpreting the Direct labor Efficiency Variance

- Employees or supervisors are new on the job or inadequately trained, Webb's personnel manager hired underskilled workers. or Supervision is inadequate.
- Undermotivated workers
- Employee skill levels are different from those specified in the standard cost Sheet.
- Scheduling is poor, Webb's production scheduler inefficiently scheduled work, resulting in more manufacturing labor time than budgeted being used per jacket. Or Batch sizes are different from the standard size.
- Using faulty equipment, causing breakdowns and work interruptions
- Materials are different from those specified.
- Machines or equipment are not in proper working condition, Webb's Maintenance Department did not properly maintain machines, resulting in more manufacturing labor time than budgeted being used per jacket.
- Insufficient demand for the company's product accompanied with fixed labor contracts, with the intent of the company to keep every worker busy.
- Budgeted time standards were set too tight without careful analysis of the operating conditions and the employees' skills.

## Company's response

Suppose Webb's managers determine that the unfavorable variance is due to poor machine maintenance. Webb may then have a team consisting of plant engineers and machine operators develop a future maintenance schedule so that there will be fewer breakdowns adversely affecting labor time and product quality.

## Responsibility of the variance

A direct labor efficiency variance usually is the responsibility of the **production department**. There may be times, however, when the **purchasing department** is responsible for an unfavorable direct labor Efficiency Variance by buying inferior material.

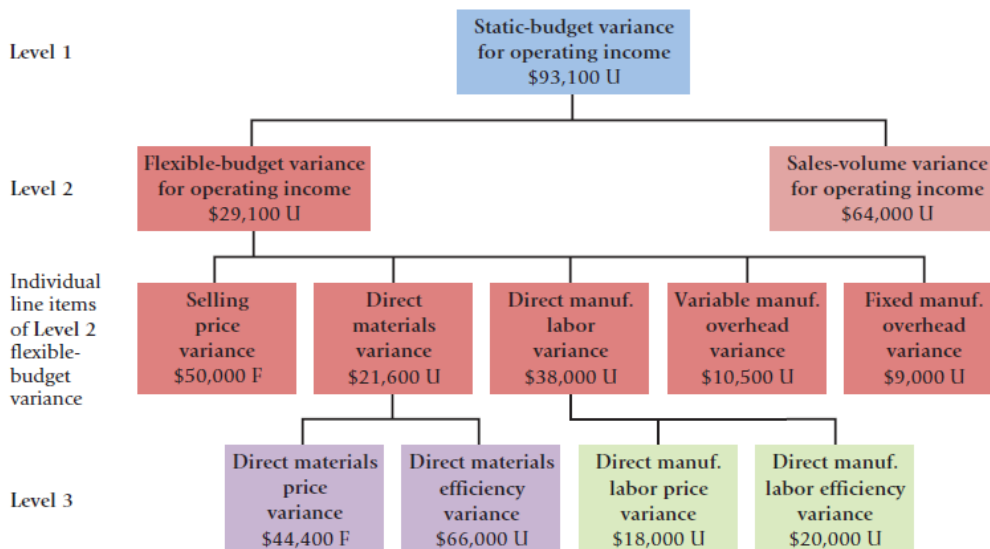
## Summary of Variances

Exhibit 7-4 is a summary of the Level 2, and 3 variances. Note how the variances in Level 3 aggregate to the variances in Level 2 and how the variances in Level 2 aggregate to the variances in Level 1.

The variances show why actual operating income is \$14,900 when the static budget operating income is \$108,000. Recall, a favorable variance has the effect of increasing operating income relative to the static budget, and an unfavorable variance has the effect of decreasing operating income relative to the static budget.

**Exhibit 7-4**

Summary of Level 1, 2, and 3 Variance Analyses





## MANAGEMENT USES OF VARIANCES

### Performance Measurement Using Variances

Variance analysis is often used for performance evaluation. Two attributes of performance are commonly evaluated:

- Effectiveness: the degree to which a predetermined objective or target is met.
- Efficiency: the relative amount of inputs used to achieve a given output level. The fewer the inputs used for a given level of output or the greater the output for a given level of input, the greater the efficiency.

Be careful to understand the causes of a variance before using it for performance evaluation.

Suppose a Webb purchasing manager has just negotiated a deal that results in a favorable price variance for direct material. The deal could have achieved a favorable variance for any or all of three reasons:

1. The purchasing manager bargained effectively with suppliers.
2. The purchasing manager secured a discount for buying in bulk with fewer purchase orders. Alas, buying larger quantities than necessary for the short run resulted in excessive inventory.
3. The purchasing manager accepted a bid from the lowest-priced supplier after only minimal effort to check that the supplier monitored the quality of the material before shipping it.

If the purchasing manager's performance is evaluated solely on price variances, then the evaluation will be positive. Reason 1 would support this favorable conclusion - the purchasing manager bargained effectively. Reasons 2 and 3 have short-run gains, buying in bulk or making less effort to check the supplier's quality-monitoring procedures. However, these short-run gains could be offset by higher inventory storage costs or higher inspection costs and defect rates on Webb's production line, leading to unfavorable direct manufacturing labor and direct materials efficiency variances.

Companies are increasingly evaluating performance based on the effect a manager's action has had on the total costs of the company as a whole. In the purchasing manager example, Webb may ultimately lose more money because of reasons 2 and 3 than it gains from the favorable price variance. *Do not automatically interpret a favorable variance as "good news."*

A benefit of variance analysis is that it highlights individual aspects of performance. However, if any single performance measure (for example, a labor efficiency variance or a consumer rating report) receives excessive emphasis, managers will tend to make decisions that make that particular performance measure look good. These actions may conflict with the company's overall goals, inhibiting them from being achieved. This faulty perspective on performance usually arises when top management designs a performance evaluation and reward system that does not emphasize total company objectives.

### Multiple Causes of Variances and Organization Learning

Variances often affect one another. For example, an unfavorable direct material efficiency variance may be related to a favorable direct material price variance due to a purchasing manager buying lower-priced, lower-quality materials. *Do not interpret variances in isolation of each other.* The causes of variances in one part of the value chain can be the result of decisions made in another part of the value chain of the company or even in another company. Consider an unfavorable direct material efficiency variance on Webb's production line.





**Possible operational causes of this variance across the value chain of the company are**

1. Poor design of products or processes,
2. Poor work on the production line,
3. Underskilled labor force,
4. Inappropriate assignment of labor or machines to specific jobs, and
5. Congestion due to scheduling a large number of rush orders from Webb's sales representatives.
6. Webb's suppliers do not manufacture cloth materials of uniformly high quality. Item6 describes an even broader perspective on the cause of the unfavorable direct material efficiency variance by considering actions taken in the supply chain of companies.

*The focus of variance analysis is to understand why variances arise and how to use that understanding to learn and to improve performance.* For instance, to reduce the unfavorable direct material efficiency variance, a company may seek improvements in product design, in the quality of supplied materials, and in the commitment of the manufacturing labor force to do the job right the first time, among other improvements. Sometimes an unfavorable direct material efficiency variance may signal a need to change product strategy, perhaps because the product cannot be made at a low enough cost. Variance analysis should not be a tool to "play the blame game" (that is, seeking a person to blame for every unfavorable variance). Rather, it should help the company learn about what happened and how to perform better.

A delicate balance needs to be struck between the two uses of variances we have discussed: performance evaluation and organization learning.

Variance analysis is helpful for performance evaluation, but an overemphasis on performance evaluation and meeting individual variance targets can undermine learning and continuous improvement. Why? Because achieving the standard becomes an end in and of itself. As a result, managers will seek targets that are easy to attain rather than targets that are challenging and that require creativity and resourcefulness. For example, if performance evaluation is overemphasized, Webb's manufacturing manager will prefer a standard that allows workers ample time to manufacture a jacket; he will have little incentive to improve processes and methods to reduce manufacturing time and cost.

An overemphasis on performance evaluation may also cause managers to take actions to achieve the budget and avoid an unfavorable variance, even if such actions could hurt the company in the long run. For example, the manufacturing manager may push workers to produce jackets within the time allowed, even if this action could lead to poorer quality jackets being produced. Such negative impacts are less likely to occur if variance analysis is seen as a way of promoting organization learning. Managers will then be more willing to experiment with ways to reduce manufacturing costs and will also be less likely to compromise quality to avoid unfavorable variances.





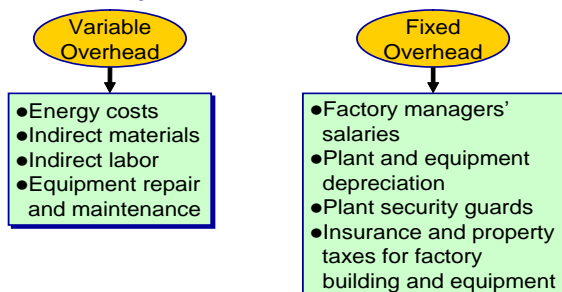
## OVERHEAD VARIANCES

Overhead costs are a big part of the costs of many companies. Chemical, paper, and steel companies incur large costs to construct and maintain their physical plant and equipment: These costs are part of their overhead costs.

This chapter shows how flexible budgets and variance analysis can help managers plan and control the overhead costs of their companies. In this chapter, we focus on the indirect-cost categories of variable manufacturing overhead and fixed manufacturing overhead. And we explain why managers should be careful when interpreting variances based on overhead cost concepts developed primarily for financial reporting purposes.

**Explain in what ways the planning of variable overhead costs and fixed overhead costs are similar and in what ways they differ.**

### Standard Costs for Factory Overhead



### Planning of Variable & Fixed Overhead Costs

Effective planning of variable overhead costs involves undertaking only those variable overhead activities that add value for customers using the product or service.

The key challenge with planning fixed overhead is choosing the appropriate level of capacity or investment that will benefit the company over an extended time period.

## Comprehensive example

Nina Garcia is the newly appointed president of Laser Products. She is examining the May 2012 results for the Aerospace Products Division. This division manufactures wing parts for satellites. Garcia's current concern is with manufacturing overhead costs at the Aerospace Products Division. Both variable and fixed overhead costs are allocated to the wing parts on the basis of laser-cutting-hours. The following budget information is available:

Budgeted variable overhead rate	\$200 per hour
Budgeted fixed overhead rate	\$240 per hour
Budgeted laser-cutting time per wing part	1.5 hours
Budgeted production and sales for May 2012	5,000 wing parts
Budgeted fixed overhead costs for May 2012	\$1,800,000

### Actual results for May 2012 are as follows:

Wing parts produced and sold	4,800 units
Laser-cutting-hours used	8,400 hours
Variable overhead costs	\$1,478,400
Fixed overhead costs	\$1,832,200

### Required

1. Compute the spending variance and the efficiency variance for variable overhead.
2. Compute the spending variance and the production-volume variance for fixed overhead.
3. Give two explanations for each of the variances calculated in requirements 1 and 2.

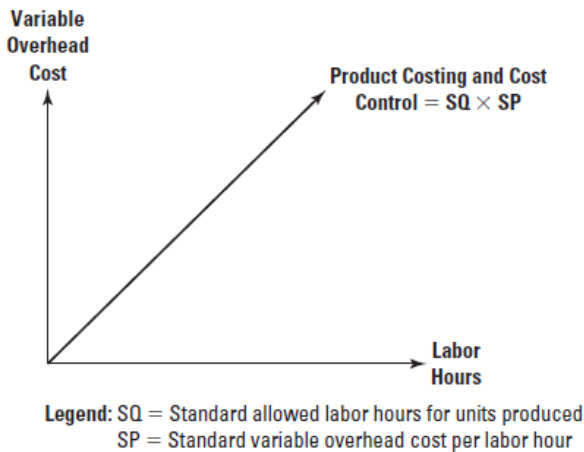


## Standard Overhead Costs: Planning versus Control

For variable factory overhead the underlying model for cost-control and product-costing purposes is the same, as illustrated in Exhibit 8-7. Laser Products Company uses machine hours as the activity variable for applying overhead costs. Other allocation bases, such as number of direct labor hours, could have been used by the company.

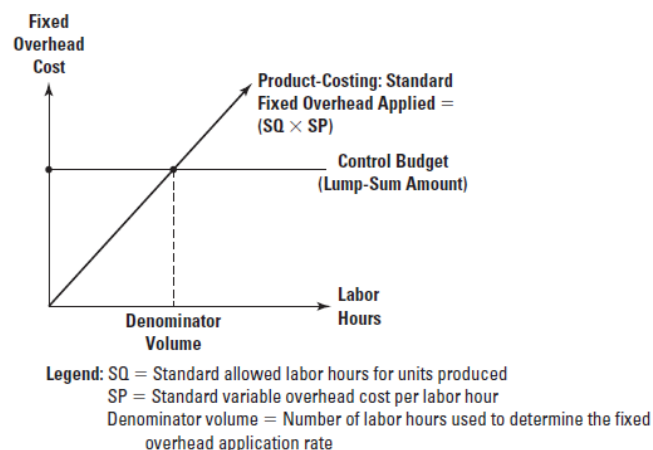
As you can see, the standard variable overhead rate per unit is \$300 (1.5 standard laser-cutting-hours/unit X \$200 standard variable overhead cost per laser-cutting-hour). It is this amount that is charged to production for the period (product-costing purpose) and that is used in the flexible budget (cost-control purpose). In short, the graph below show variable overhead cost is similar in form to what we could have prepared either direct materials cost or direct labor cost. This makes sense because all three are variable costs.

## Variable Manufacturing Overhead: Product-Costing versus Control Purposes



The situation for fixed costs, however, is different, as reflected in the graph presented below. For cost-control purposes, we see that budgeted (lump-sum) fixed overhead costs are used—see the horizontal line in Exhibit 15.3. At the end of the period, this budgeted amount is compared to the actual fixed overhead cost incurred. The resulting difference is called a *spending variance*. For product-costing purposes, however, we must “unitize” fixed overhead costs. As indicated in Exhibit 15.3, for product-costing purposes we treat fixed overhead costs as if they were variable costs. In our Company case, the standard fixed overhead rate per unit produced is \$360 (i.e., 1.5 standard direct laser hours per unit X \$240 standard fixed overhead cost per hour).

**EXHIBIT 15.3**  
Fixed Manufacturing Overhead Costs: Product Costing versus Control





We assume that Laser Products Company uses a standard cost system. Thus, at the end of each period the accountant for the company prepares an analysis of the total standard cost variance for both variable and fixed overhead costs. In each case, the goal will be to explain the difference between the actual cost incurred and the cost charged to production (units produced) for the period.

For product-costing purposes, the total overhead variance for the period (also called the total under/overapplied overhead) is equal to the difference between actual overhead cost incurred and the standard overhead cost applied to production.

$$\text{Total overhead variance} = \text{Total actual overhead} - \text{Total applied overhead}$$

$$= (\text{Total variable overhead} + \text{Total fixed overhead}) - (\text{Total overhead application rate} \times \text{Standard hours allowed for this period's production})$$

$$= (\$1,478,400 + \$1,832,200) - (\{200+240\} \text{ per hour} \times 4800 \times 1.5 \text{ hours per unit})$$

$$= (\$3,310,600) - (\$3,168,000)$$

$$= \$142,600 \text{ U (underapplied overhead)}$$

As explained below, the total overhead variance for the period can be subdivided into a set of variable overhead cost variances and a set of fixed overhead cost variances.

## Applied Overhead Costs: Normal Cost System versus Standard Cost System (Exhibit 11A-2)

Normal Cost System		Standard Cost System	
Manufacturing Overhead		Manufacturing Overhead	
Actual overhead costs incurred.	Applied overhead costs: Actual hours $\times$ Pre-determined overhead rate.	Actual overhead costs incurred.	Applied overhead costs: Standard hours allowed for actual output $\times$ Pre-determined overhead rate.
Underapplied or overapplied overhead		Underapplied or overapplied overhead	

To understand fixed overhead variances, we first have to understand how overhead is applied to work in process in a standard cost system. Recall that in the job-order costing chapter we applied overhead to work in process on the basis of the actual level of activity. This procedure was correct because at the time we were dealing with a normal cost system. However, we are now dealing with a standard cost system. In such a system, overhead is applied to work in process on the basis of the standard hours allowed for the actual output of the period rather than on the basis of the actual number of hours worked. Exhibit 11A-2 illustrates this point. In a standard cost system, every unit of a particular product is charged with the same amount of overhead cost, regardless of how much time the unit actually requires for processing.



## Variable manufacturing Overhead Cost Analysis

The total variable overhead variance is the difference between actual variable overhead cost incurred and the standard variable overhead cost applied to production; also called over- or underapplied variable overhead for the period.

=actual variable overhead costs incurred (\$1,478,400) - the standard variable overhead costs charged to production during May 2012 [\$1,440,000= (4800 units X 1.5 standard laser hours per unit)X \$200 standard variable overhead cost per laser hour].

= \$38,400 U underapplied variable overhead for the period

**(Total variable overhead variance)= Over/under allocated VOH=VOH FB Variance**

Variable overhead = Actual costs - Flexible-budget  
flexible- budget variance incurred amount

**FB VOH variance = Spending variance + Efficiency Variance**

## Cost Control: Breakdown of the Total Variable Overhead Variance

We see from Exhibit 8-7 panel A that the total variable overhead variance for a period (\$38,400U in our example) can be broken down into a **variable overhead spending variance** and a **variable overhead efficiency variance**, as follows:

### Variable overhead spending variance

**Variable overhead spending variance** is the difference between actual variable overhead cost incurred and the flexible budget for variable overhead based on *inputs* for the period (e.g., actual laser cutting hours worked)

Spending variance= \$201,600 F

Variable overhead spending variance =

*Actual* variable overhead - *Budgeted* variable overhead based on inputs (e.g., actual laser hours worked)  
=(AQ x AP)-(AQ x SP)  
=AQ X (AP-SP)

= (8,400 hrs.X176/hr.) - (8,400 hrs. X \$200/hr.)  
=\$1,478,400- \$1,680,000 or = 8400 actual hours X (\$176-\$200)  
= \$201,600 F

### Possible reasons

- One possible reason for this variance is that actual prices of individual items included in variable overhead (such a cutting fluids, supplies and utilities) are lower than budgeted prices.
- A second possible reason is that the percentage increase in the actual quantity usage of individual items in the variable overhead cost pool is less than the percentage increase in machine-hours compared to the flexible budget.

#### Variable OH Spending Variance

Variable	Actual variable		Budgeted variable		Actual quantity of
Overhead =	overhead	-	overhead cost per	x	variable overhead
Spending			unit of cost-allocation base		cost-allocation base
variance					used for actual output

Variable overhead = (AH X AR) – (AH X SR)  
spending variance

Or, in factored form:

**AH (AR-SR)**

**Variable overhead efficiency variance**

**Variable overhead efficiency variance** is the difference between the flexible budget for variable overhead based on *inputs* (e.g., actual laser cutting hours worked) and the flexible budget for variable overhead based on *outputs* (i.e., standard allowed laser hours for units produced).

Variable overhead efficiency variance=

Budgeted variable overhead based on inputs - Standard variable overhead *applied* to production

$$= (AQ \times SP) - (SQ \times SP)$$

$$= SP \times (AQ - SQ)$$

As the amount of standard overhead cost applied to production (product-costing purpose) and the flexible budget based on output (cost-control purpose) for variable overhead are always equal. Thus, the second term on the right-hand side of the above equation could have been expressed as "budgeted variable overhead based on outputs."

$$= (8,400 \text{ hrs.} \times \$200/\text{hr.}) - (1.5 \text{ hrs./unit} \times 4,800 \text{ units} \times \$200/\text{hr.})$$

$$= (8,400 \text{ hrs.} \times \$200/\text{hr.}) - (7,200 \text{ hrs.} \times \$200/\text{hr.})$$

$$= \$1,680,000 - \$1,440,000$$

$$\text{Efficiency variance} = \$240,000 \text{ U}$$

**Possible reasons**

One possible reason for this variance is inadequate maintenance of laser machines, causing them to take more laser time per wing part. A second possible reason is use of undermotivated, inexperienced, or underskilled workers with the laser-cutting machines, resulting in more laser-time per wing part. Efficiency variance is a function of the selected activity measure. It does not reflect overhead control.

**Variable OH efficiency variance**

Variable	Actual quantity of	Budgeted quantity of		Budgeted variable
Overhead	variable overhead	variable overhead		overhead cost per unit
=	cost-allocation base -	cost-allocation base	X	of cost-allocation base
efficiency	used for actual	allowed for		
variance	output	actual output		

Or, in factored form:

$$SR(AH - SH)$$

$$\text{Variable overhead efficiency variance} = (AH \times SR) - (SH \times SR)$$

**Exhibit 8-7**Columnar Presentation of Integrated Variance Analysis: Laser Products for May 2012<sup>a</sup>**PANEL A: Variable (Manufacturing) Overhead**

Actual Costs Incurred: Actual Input Quantity × Actual Rate (1)	Actual Input Quantity × Budgeted Rate (2)	Flexible Budget: Budgeted Input Quantity Allowed for Actual Output × Budgeted Rate (3)	Allocated: Budgeted Input Quantity Allowed for Actual Output × Budgeted Rate (4)
(8,400 hrs. × \$176/hr.) \$1,478,400	(8,400 hrs. × \$200/hr.) \$1,680,000	(1.5 hrs./unit × 4,800 units × \$200/hr.) (7,200 hrs. × \$200/hr.) \$1,440,000	(1.5 hrs./unit × 4,800 units × \$200/hr.) (7,200 hrs. × \$200/hr.) \$1,440,000
	\$201,600 F	\$240,000 U	
	Spending variance	Efficiency variance	Never a variance
	\$38,400 U		
	Flexible-budget variance		Never a variance
		\$38,400 U	
		Underallocated variable overhead (Total variable overhead variance)	

**Fixed Overhead Cost Analysis**

The **total fixed overhead variance** is the difference between the actual fixed overhead cost incurred and the fixed overhead cost applied to production based on a standard fixed overhead application rate; also called *over or underapplied fixed overhead* for the period.

(Total fixed overhead variance)= Over/under allocated FOH=

**Fixed OH FB variance ( Spending FOH variance) + Production Volume Variance**

For product-costing purposes, the total variance is \$104,200 U, which is the difference between actual fixed overhead costs incurred (\$1,832,200 ) and the standard fixed overhead costs charged to production during May (1.5 hrs./unit X 4,800 units X \$240/hr.) (7,200 hrs. X \$240/hr.) \$1,728,000

Note, too, that this total variance, from a product-costing standpoint, could be called *total over- or underapplied fixed overhead cost* for the period. When the actual fixed overhead costs are greater than the fixed overhead costs assigned to production, as they were for the month of May, we call the \$104,200 U figure *under applied* fixed overhead.

**The Production-Volume (Denominator /Output-Level) Variance**

**Fixed overhead productionvolume variance** is the difference between budgeted fixed overhead for the period and the standard fixed overhead applied to production (using the fixed overhead allocation rate).

As noted earlier in unit 3, for federal income tax and GAAP purposes, companies must report inventories on a full (absorption) cost basis. This means that each unit produced must absorb a share of fixed factory overhead costs in addition to variable manufacturing costs. In turn, this requires that fixed overhead costs be “unitized” for product-costing purposes.

**Volume Variance**

Volume = variance	Fixed component of the predetermined overhead rate	X	(Denominator _ Standard hours) hours                  allowed
Production volume = Variance	Budgeted fixed Overhead	-	Fixed overhead allocated using budgeted input allowed for actual output units produced

The following four-step process can be used for this purpose.

**Step 1: Determine budgeted total fixed factory overhead** Fixed manufacturing overhead costs, by definition, do not vary in the short run in response to changes in output or activity. As such, these costs are often referred to as *capacity-related* manufacturing support costs. Thus, once an organization has determined its capacity for an upcoming period (e.g., one year), it constructs a budget for capacity-related costs. In the case of our Company, assume that the capacity-related manufacturing costs are estimated at \$1800,000 per month.

**Step 2: Choose an appropriate activity measure for applying fixed factory overhead i.e. ,laser cutting hours in our example.**

**Step 3: Choose a denominator activity level** In order to unitize fixed overhead costs for product-costing purposes, we must choose some level of output (activity) over which the budgeted fixed costs for the period can be spread. Our Company uses 7500 laser hours per month (i.e., 5000 units X 1.5 laser hours per unit) for this purpose. The general term used to describe the level of output (activity) used to establish the standard **fixed overhead application rate** is **denominator activity level** or **denominator volume**. Several alternatives exist for defining the denominator activity level: two “supply-based” alternatives, and two “demand-based” alternatives as stated in U.3 .

**Step 4: Calculate the predetermined fixed overhead application rate**

= \$1,800,000 ÷ 5000units X 1.5(laser hours)

= \$1,800,000 ÷ 7500 laser cutting hours





In summary, for product-costing purposes a company must choose an activity level over which it spreads budgeted fixed manufacturing costs for a given period. If the company actually operates at the level assumed when the application rate was determined, it will have assigned to production an amount exactly equal to the budgeted fixed overhead for the period. If, on the other hand, the company operates at any level of activity other than the denominator activity level, then it will have applied to production an amount greater or lesser than budgeted fixed overhead. It is this over- or underapplied budgeted fixed overhead that we call the **production-volume variance** for the period.

For May, this variance for our Company is \$72,000 U as follows:

Production-volume variance=

Budgeted fixed factory overhead cost Standard- fixed overhead cost assigned to production

= \$1,800,000 - (1.5 hrs./unit \_ 4,800 units \_ \$240/hr.)

= \$1,800,000 - (7,200 hrs. \_ \$240/hr.)

= \$1,800,000 - \$1,728,000

= \$72,000 U

Or

= SP X (Denominator activity hours – SQ)

= \$240/hour X {7500-(4800\*1.5 hours/unit)}

= \$240/hour X (7500-7200)

= \$72,000 U

### Possible reasons

- Actual production of wing parts is 4,800 units, compared with the 5,000 units budgeted. One possible reason for this variance is demand factors, such as a decline in an aerospace program that led to a decline in the demand for aircraft parts.
- A second possible reason is supply factors, such as a production stoppage
- Interpretation of this variance is difficult due to the nature of the costs involved and how they are budgeted
- Fixed costs are by definition somewhat inflexible. While market conditions may cause production to flex up or down, the associated fixed costs remain the same
- Fixed costs may be set years in advance, and may be difficult to change quickly
- The inability to operate at the activity budgeted for the period.
- Management decisions, Unexpected changes in market demand, Unforeseen problems in manufacturing operations

### Production (Denominator) Volume Variance

This variance is an artifact of unitizing fixed overhead costs for product-costing purposes. This variance has no meaning for cost-control purposes. However, if practical capacity is used to establish the fixed overhead application rate, then the production-volume variance can be viewed as a rough measure of capacity utilization. This is because the variance reflects differences between available capacity and actual capacity usage. In short, the reporting of production volume variances over time provides decision makers with information that can be used to manage *spending* on capacity-related resources. For example, consistently reported underapplied fixed overhead (i.e., unfavorable production-volume variances) may signal the need to reduce spending on capacity-related costs or motivate action to better utilize the capacity that does exist. You will note that if the fixed overhead allocation rate were based on expected (budgeted) output, then the cost of unused capacity would be hidden, that is, charged to the units actually produced during the period. To the extent that selling prices are based on indicated costs and budgeted output is less than practical capacity, the use of budgeted output could lead to successively increasing charges (and, therefore, selling prices) over time, a situation referred to as the **death-spiral effect**. In this case, fixed overhead costs get allocated over successively lower outputs.

When practical capacity is used to calculate the fixed overhead application rate, the cost of unused capacity becomes visible to management through the amount and direction of the production-volume variance. To avoid misinterpretations, yet communicate information regarding capacity usage, some companies prefer to report the fixed overhead production volume variance in physical terms only.



Finally, we note the importance of not placing too much emphasis on individual variances because of the interrelatedness of these performance indicators. For example, a production department in a manufacturing facility can generate a favorable production-volume variance by overproducing for the period, that is, producing more units than needed to meet sales and target ending inventory requirements. Such practice, of course, runs counter to the JIT philosophy.

In this case, a financial performance indicator (production-volume variance) might be accompanied by one or more nonfinancial performance indicators (e.g., inventory turnover or spoilage/obsolescence rates).

### **Fixed Overhead Spending (Budget) Variance**

Spending (Budget) Variance is the difference between budgeted and actual fixed factory overhead costs for a period. For our Company, the fixed overhead spending (budget) variance for May was \$32,200 U, as follows:

$$\begin{aligned}\text{Fixed overhead spending variance} &= \text{Actual fixed overhead} - \text{Budgeted fixed overhead} \\ &= \$1,832,200 - \$1,800,000 \\ &= \$32,200 \text{ U}\end{aligned}$$

#### **Fixed OH FB variance= Spending FOH variance**

Fixed overhead	=	Actual costs	Flexible-budget
flexible-budget variance		incurred	- amount

Budget	Actual fixed	-	Budgeted fixed
Variance=	overhead cost		overhead cost

Also equal,

Fixed overhead	=	Actual costs - Flexible-budget
spending variance		incurred amount

### **Possible reasons**

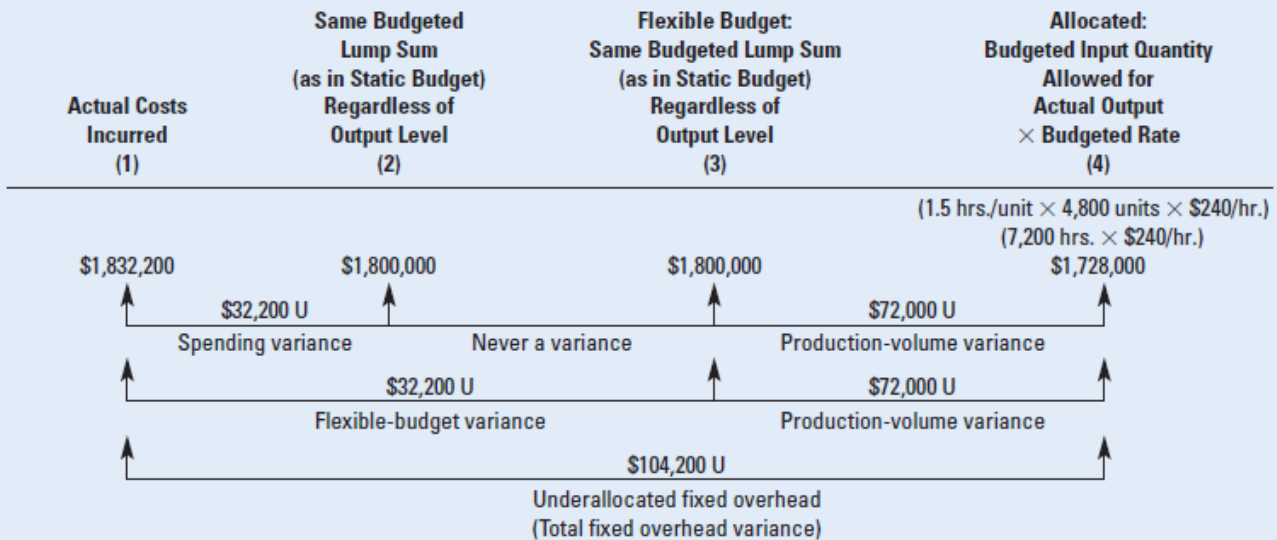
One possible reason for this variance is that the actual prices of individual items in the fixed-cost pool unexpectedly increased from the prices budgeted (such as an unexpected increase in machine leasing costs). A second possible reason is misclassification of items as fixed that are in fact variable.

- Paying more or less than expected for overhead items For example, a budget that inadvertently neglected scheduled raises for factory managers, changes in property taxes on factory buildings and equipment, or purchases of new equipment create unfavorable spending variances.
- Ineffective budget procedures
- Inadequate control of costs(EX: Events such as emergency repairs, impromptu replacement of equipment, or the addition of production supervisors for an unscheduled second shift all would result in unfavorable fixed overhead spending variances for the period).
- Misclassification of cost items



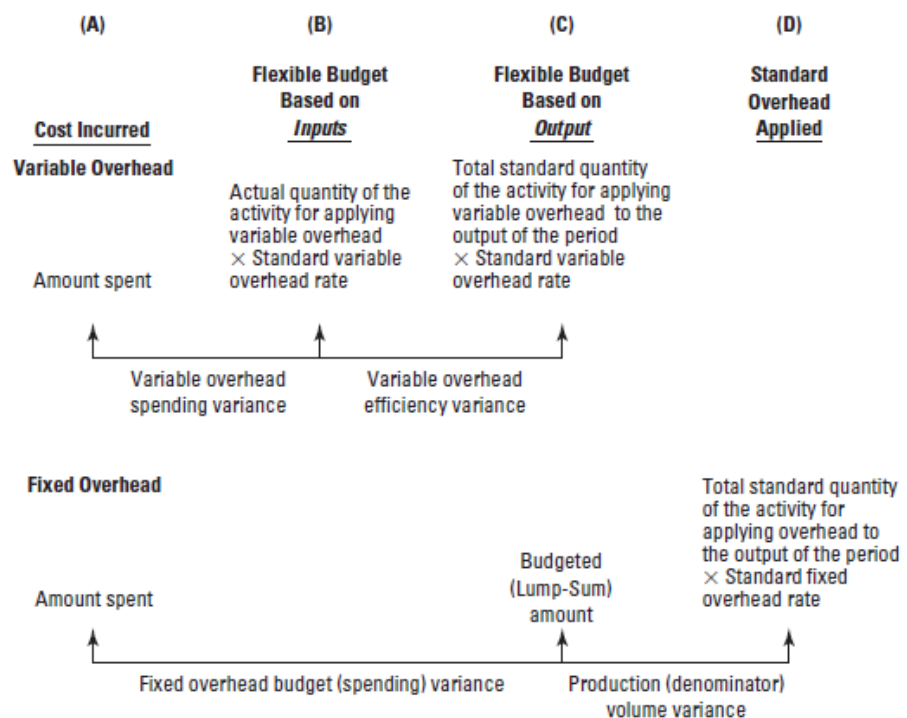


**PANEL B: Fixed (Manufacturing) Overhead**



**EXHIBIT 15.6**

**General Model: Four-Way Analysis of Total Overhead Variance**



Before leaving this discussion, it is important to point out some alternative terminology for the variances to which we referred in the preceding sections. When standard costs are incorporated formally into the accounting records (that is, when a standard cost system is used), we have already indicated that the total overhead variance for the period can also be referred to as *total over- or underapplied overhead*. Also, note that the production volume variance is also referred to as the *capacity variance*, the *idle-capacity variance*, the *denominator-level variance*, the *output-level overhead variance*, or simply, the *denominator variance*. The spending variance for variable overhead is sometimes referred to as a *price variance* or a *budget variance*. The total flexible-budget variance for overhead (and by extension the total flexible-budget variance for fixed overhead and the total flexible-budget variance for variable overhead) is sometimes referred to as a *controllable variance*. This latter term is more descriptive of the use of standard costs and related variances for cost-control purposes. For this reason, the production-volume variance is sometimes referred to as the *noncontrollable overhead variance*. The important point is that, unfortunately, this is an area where the terminology is not standard. Therefore, you need to keep the above-listed alternatives in mind in any given situation.



## Operational Performance Measurement: Further Analysis of Productivity and Sales

### PARTIAL AND TOTAL FACTOR PRODUCTIVITY

Productivity is the ratio of output to input. Improvements in productivity enable firms to do more with fewer resources. A productivity measure is often compared to the performance of a prior period, another firm, the industry standard, or a benchmark in assessing a firm's productivity.

- **Fabro, Inc. produced 1,500 units of Product RX-6 last week. The inputs to the production process for Product RX-6 were as follows:**

- 450 pounds of Direct Material A at a cost of \$1.50 per pound
- 300 pounds of Direct Material Z at a cost of \$2.75 per pound
- 300 labor hours at a cost of \$15.00 per hour

What is the total factor productivity for Product RX-6?

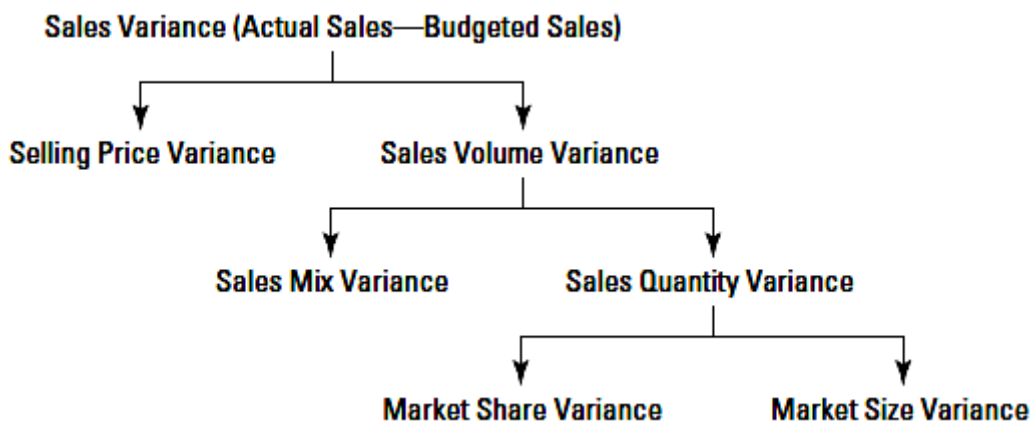
- Total factor productivity equals units of output divided by the cost of all inputs.
- Hence, the total factor productivity equals 0.25 units per dollar input  $\{1,500 \text{ units} \div [(450 \text{ pounds of A} \times \$1.50) + (300 \text{ pounds of Z} \times \$2.75) + (300 \text{ hours} \times \$15)]\}$ .

What is the partial productivity for DM for Product RX-6?

- A **partial productivity** measure is the **ratio of output quantity to input quantity** for a single factor of production.
- **The partial productivity for the DM**, Hence, the **partial** productivity equals 1.00 unit per dollar input  $\{1,500 \text{ units} \div [(450 \text{ pounds of A} \times \$1.50) + (300 \text{ pounds of Z} \times \$2.75)]\}$ .

### Sales Variances

To effectively evaluate sales performance, management must be fully informed of the effects of changes in selling prices, sales volumes, sale mixes, market sizes, and market shares on the firm's sales.



To effectively evaluate sales performance, management must be fully informed of the effects of changes in selling prices, sales volumes, sale mixes, market sizes, and market shares on the firm's sales.

The sales volume variance reflects the difference in contribution margin or operating income between a flexible budget and the master budget. The sales volume variance for a single product firm can be determined by multiplying the budgeted contribution margin per unit of the product times the difference in units between the number of units sold and the budgeted units to be sold. The sales volume variance of firms with multiple products can be separated into sales mix and sales quantity variances. The sales mix variance is the product of three components:

1. The difference between the actual sales mix (defined as the ratio of the units of the product to the total units of all products) and the budgeted sales mix
2. The total number of units of all products sold during the period
3. The product's budgeted contribution margin



A product's sales quantity variance has three elements: (1) the difference between the firm's total actual units sold and budgeted sales units, (2) the product's budgeted sales mix, and (3) the budgeted contribution margin. The product of these three elements is the product's sales quantity variance.

A sales quantity variance assesses the effect of the difference between the units sold and budgeted sales on total contribution margin and operating income.

A sales quantity variance can be separated further into market size and market share variances. A market size variance assesses the effect of changes in the industry's total market size on the firm's total contribution margin and operating income.

A market size variance is the product of three factors: (1) the difference between the actual and the budgeted total market size (in number of units), (2) the firm's budgeted market share, and (3) the weighted-average budgeted contribution margin per unit. The market size variance is favorable if the actual total market size is larger than the market size expected when the master budget was prepared.

A market share variance measures the effect of changes in the firm's market share on its operating income. A market share variance is the product of three elements: (1) the actual total number of units in the market (actual market size), (2) the difference between the firm's actual and budgeted market share, and (3) the weighted average budgeted contribution margin per unit.

Sales performance can be analyzed from either of two benchmarks: the master budget or the prior period. The period-to-period analysis also uses the flexible budget, and the same variances are calculated, with similar interpretations.

The Payne Company manufactures two types of vinyl flooring. Budgeted and actual operating data for 2012 are as follows:

	Static Budget			Actual Results		
	Commercial	Residential	Total	Commercial	Residential	Total
Unit sales in rolls	20,000	60,000	80,000	25,200	58,800	84,000
Contribution margin	\$10,000,000	\$24,000,000	\$34,000,000	\$11,970,000	\$24,696,000	\$36,666,000

In late 2011, a marketing research firm estimated industry volume for commercial and residential vinyl flooring for 2012 at 800,000 rolls. Actual industry volume for 2012 was 700,000 rolls.

1. Compute the sales-mix variance and the sales-quantity variance by type of vinyl flooring and in total. (Compute all variances in terms of contribution margins.)
2. Compute the market-share variance and the market-size variance .
3. What insights do the variances calculated in requirements 1 and 2 provide about Payne Company's performance in 2012?

### Solution

1. Actual sales-mix percentage:

Commercial =  $25,200 \div 84,000 = 0.30$ , or 30%

Residential =  $58,800 \div 84,000 = 0.70$ , or 70%

- Budgeted sales-mix percentage:

Commercial =  $20,000 \div 80,000 = 0.25$ , or 25%

Residential =  $60,000 \div 80,000 = 0.75$ , or 75%

- Budgeted contribution margin per unit:

Commercial =  $\$10,000,000 \div 20,000 \text{ units} = \$500 \text{ per unit}$

Residential =  $\$24,000,000 \div 60,000 \text{ units} = \$400 \text{ per unit}$



	Actual Units of All Products Sold	×	$\left( \begin{array}{c} \text{Actual} \\ \text{Sales-Mix} \\ \text{Percentage} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{Sales-Mix} \\ \text{Percentage} \end{array} \right)$	×	Budgeted Contribution Margin per Unit	=	Sales-Mix Variance
Commercial	84,000 units	×	(0.30 – 0.25)	×	\$500 per unit	=	\$2,100,000 F
Residential	84,000 units	×	(0.70 – 0.75)	×	\$400 per unit	=	1,680,000 U
Total sales-mix variance							<u>\$ 420,000 F</u>

	$\left( \begin{array}{c} \text{Actual Units} \\ \text{of All} \\ \text{Products Sold} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{Units of All} \\ \text{Products Sold} \end{array} \right)$	×	Budgeted Sales-Mix Percentage	×	Budgeted Contribution Margin per Unit	=	Sales- Quantity Variance
Commercial	(84,000 units – 80,000 units)	×	0.25	×	\$500 per unit	=	\$ 500,000 F
Residential	(84,000 units – 80,000 units)	×	0.75	×	\$400 per unit	=	1,200,000 F
Total sales-quantity variance							<u>\$1,700,000 F</u>

2. Actual market share =  $84,000 \div 700,000 = 0.12$ , or 12%

Budgeted market share =  $80,000 \div 800,000$  units = 0.10, or 10%

Budgeted contribution margin

per composite unit =  $\$34,000,000 \div 80,000$  units = \$425 per unit  
of budgeted mix

Budgeted contribution margin per composite unit of budgeted mix can also be calculated as follows:

Commercial:  $\$500 \text{ per unit} \times 0.25 = \$125$

Residential:  $\$400 \text{ per unit} \times 0.75 = \underline{300}$

Budgeted contribution margin per composite unit = \$425

$$\text{Market-share variance} = \begin{array}{c} \text{Actual} \\ \text{market size} \\ \text{in units} \end{array} \times \left( \begin{array}{c} \text{Actual} \\ \text{market} \\ \text{share} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{market} \\ \text{share} \end{array} \right) \times \begin{array}{c} \text{Budgeted} \\ \text{contribution margin} \\ \text{per composite unit} \\ \text{for budgeted mix} \end{array}$$

$$= 700,000 \text{ units} \times (0.12 - 0.10) \times \$425 \text{ per unit}$$

$$= \$5,950,000 \text{ F}$$

$$\text{Market-size variance} = \left( \begin{array}{c} \text{Actual} \\ \text{market size} \\ \text{in units} \end{array} - \begin{array}{c} \text{Budgeted} \\ \text{market size} \\ \text{in units} \end{array} \right) \times \begin{array}{c} \text{Budgeted} \\ \text{market} \\ \text{share} \end{array} \times \begin{array}{c} \text{Budgeted} \\ \text{contribution margin} \\ \text{per composite unit} \\ \text{for budgeted mix} \end{array}$$

$$= (700,000 \text{ units} - 800,000 \text{ units}) \times 0.10 \times \$425 \text{ per unit}$$

$$= \$4,250,000 \text{ U}$$



Note that the algebraic sum of the market-share variance and the market-size variance is equal to the sales-quantity variance: \$5,950,000 F + \$4,250,000 U = \$1,700,000 F.

3. Both the total sales-mix variance and the total sales-quantity variance are favorable. The favorable sales-mix variance occurred because the actual mix comprised more of the higher-margin commercial vinyl flooring. The favorable total sales-quantity variance occurred because the actual total quantity of rolls sold exceeded the budgeted amount.

The company's large favorable market-share variance is due to a 12% actual market share compared with a 10% budgeted market share. The market-size variance is unfavorable because the actual market size was 100,000 rolls less than the budgeted market size. Payne's performance in 2012 appears to be very good. Although overall market size declined, the company sold more units than budgeted and gained market share.

### Mix and Yield Variances for Substitutable Inputs

The framework for calculating the sales-mix variance and the sales-quantity variance can also be used to analyze production-input variances in cases in which managers have some leeway in combining and substituting inputs.

For example, Del Monte can combine material inputs (such as pineapples, cherries, and grapes) in varying proportions for its cans of fruit cocktail. Within limits, these individual fruits are *substitutable inputs* in making the fruit cocktail.

We illustrate how the efficiency variance can be subdivided into variances that highlight the financial impact of input mix and input yield when inputs are substitutable. Consider Delpino Corporation, which makes tomato ketchup. Our example focuses on direct material inputs and substitution among three of these inputs. The same approach can also be used to examine substitutable direct manufacturing labor inputs.

To produce ketchup of a specified consistency, color, and taste, Delpino mixes three types of tomatoes grown in different regions: Latin American tomatoes (Latoms), California tomatoes (Caltoms), and Florida tomatoes (Flotoms). Delpino's production standards require 1.60 tons of tomatoes to produce 1 ton of ketchup; 50% of the tomatoes are budgeted to be Latoms, 30% Caltoms, and 20% Flotoms. The direct material inputs budgeted to produce 1 ton of ketchup are as follows:

0.80 (50% of 1.6) ton of Latoms at \$70 per ton	\$ 56.00
0.48 (30% of 1.6) ton of Caltoms at \$80 per ton	38.40
0.32 (20% of 1.6) ton of Flotoms at \$90 per ton	28.80
Total budgeted cost of 1.6 tons of tomatoes	<u>\$123.20</u>

Budgeted average cost per ton of tomatoes is  $\$123.20 \div 1.60 \text{ tons} = \$77 \text{ per ton}$ .

Because Delpino uses fresh tomatoes to make ketchup, no inventories of tomatoes are kept.

Purchases are made as needed, so all price variances relate to tomatoes purchased and used.

Actual results for June 2012 show that a total of 6,500 tons of tomatoes were used to produce 4,000 tons of ketchup:

3,250 tons of Latoms at actual cost of \$70 per ton	\$227,500
2,275 tons of Caltoms at actual cost of \$82 per ton	186,550
975 tons of Flotoms at actual cost of \$96 per ton	93,600
6,500 tons of tomatoes	<u>507,650</u>
Budgeted cost of 4,000 tons of ketchup at \$123.20 per ton	<u>492,800</u>
Flexible-budget variance for direct materials	<u>\$ 14,850 U</u>





Given the standard ratio of 1.60 tons of tomatoes to 1 ton of ketchup, 6,400 tons of tomatoes should be used to produce 4,000 tons of ketchup. At standard mix, quantities of each type of tomato required are as follows:

**Latoms:**  $0.50 \times 6,400 = 3,200$  tons

**Caltoms:**  $0.30 \times 6,400 = 1,920$  tons

**Flotoms:**  $0.20 \times 6,400 = 1,280$  tons

### Direct Materials Price and Efficiency Variances

Exhibit 14-12 presents in columnar format the analysis of the flexible-budget variance for direct materials discussed

in Chapter 7. The materials price and efficiency variances are calculated separately for each input material and then

added together. The variance analysis prompts Delpino to investigate the unfavorable price and efficiency variances.

Why did it pay more for tomatoes and use greater quantities than it had budgeted? Were actual market prices of tomatoes

higher, in general, or could the purchasing department have negotiated lower prices? Did the inefficiencies result

from inferior tomatoes or from problems in processing?

#### Exhibit 14-12

Direct Materials Price and Efficiency Variances for the Delpino Corporation June 2012

	Actual Costs Incurred: Actual Input Quantity × Actual Price (1)	Actual Input Quantity × Budgeted Price (2)	Flexible Budget: Budgeted Input Quantity Allowed for Actual Output × Budgeted Price (3)
Latoms:	$3,250 \times \$70 = \$227,500$	$3,250 \times \$70 = \$227,500$	$3,200 \times \$70 = \$224,000$
Caltoms:	$2,275 \times \$82 = 186,550$	$2,275 \times \$80 = 182,000$	$1,920 \times \$80 = 153,600$
Flotoms:	$975 \times \$96 = 93,600$	$975 \times \$90 = 87,750$	$1,280 \times \$90 = 115,200$
	<u>\$507,650</u>	<u>\$497,250</u>	<u>\$492,800</u>
Level 3		\$10,400 U	\$4,450 U
		Price variance	Efficiency variance
Level 2		\$14,850 U	
		Flexible-budget variance	

F = favorable effect on operating income; U = unfavorable effect on operating income.

### Direct Materials Mix and Direct Materials Yield Variances

Managers sometimes have discretion to substitute one material for another. The manager of Delpino's ketchup plant has some leeway in combining Latoms, Caltoms, and Flotoms without affecting the ketchup's quality. We will assume that to maintain quality, mix percentages of each type of tomato can only vary up to 5% from standard mix. For example, the percentage of Caltoms in the mix can vary between 25% and 35% (30%  $\pm$  5%). When inputs are substitutable, direct materials efficiency improvement relative to budgeted costs can come from two sources: (1) using a cheaper mix to produce a given quantity of output, measured by the direct materials mix variance, and (2) using less input to achieve a given quantity of output, measured by the direct materials yield variance.



Holding actual total quantity of all direct materials inputs used constant, the total **direct materials mix variance** is the difference between (1) budgeted cost for actual mix of actual total quantity of direct materials used and (2) budgeted cost of budgeted mix of actual total quantity of direct materials used. Holding budgeted input mix constant, the **direct materials yield variance** is the difference between (1) budgeted cost of direct materials based on actual total quantity of direct materials used and (2) flexible-budget cost of direct materials based on budgeted total quantity of direct materials allowed for actual output produced. Exhibit 14-13 presents the direct materials mix and yield variances for the Delpino Corporation.

### Direct Materials Mix Variance

The total direct materials mix variance is the sum of the direct materials mix variances for each input:

$$\text{Direct materials mix variance for each input} = \text{Actual total quantity of all direct materials inputs used} \times \left( \frac{\text{Actual direct materials input mix percentage} - \text{Budgeted direct materials input mix percentage}}{\text{Budgeted price of direct materials input}} \right)$$

The direct materials mix variances are as follows:

$$\begin{aligned} \text{Latoms: } & 6,500 \text{ tons} \times (0.50 - 0.50) \times \$70 \text{ per ton} = 6,500 \times 0.00 \times \$70 = \$ 0 \\ \text{Caltoms: } & 6,500 \text{ tons} \times (0.35 - 0.30) \times \$80 \text{ per ton} = 6,500 \times 0.05 \times \$80 = 26,000 \text{ U} \\ \text{Flotoms: } & 6,500 \text{ tons} \times (0.15 - 0.20) \times \$90 \text{ per ton} = 6,500 \times -0.05 \times \$90 = 29,250 \text{ F} \\ \text{Total direct materials mix variance} & \underline{\underline{\$ 3,250 \text{ F}}} \end{aligned}$$

The total direct materials mix variance is favorable because relative to the budgeted mix, Delpino substitutes 5% of the cheaper Caltoms for 5% of the more-expensive Flotoms.

#### Exhibit 14-13

Total Direct Materials Yield and Mix Variances for the Delpino Corporation for June 2012

	Actual Total Quantity of All Inputs Used × Actual Input Mix × Budgeted Price (1)	Actual Total Quantity of All Inputs Used × Budgeted Input Mix × Budgeted Price (2)	Flexible Budget: Budgeted Total Quantity of All Inputs Allowed for Actual Output × Budgeted Input Mix × Budgeted Price (3)
Latoms:	$6,500 \times 0.50 \times \$70 = \$227,500$	$6,500 \times 0.50 \times \$70 = \$227,500$	$6,400 \times 0.50 \times \$70 = \$224,500$
Caltoms:	$6,500 \times 0.35 \times \$80 = 182,000$	$6,500 \times 0.30 \times \$80 = 156,000$	$6,400 \times 0.30 \times \$80 = 153,600$
Flotoms:	$6,500 \times 0.15 \times \$90 = 87,750$	$6,500 \times 0.20 \times \$90 = 117,000$	$6,400 \times 0.20 \times \$90 = 115,200$
	<u>\$497,250</u>	<u>\$500,500</u>	<u>\$492,800</u>
Level 4		\$3,250 F	\$7,700 U
		Mix variance	Yield variance
Level 3			\$4,450 U
			Efficiency variance

F = favorable effect on operating income; U = unfavorable effect on operating income.

**Direct Materials Yield Variance**

The direct materials yield variance is the sum of the direct materials yield variances for each input:

$$\text{Direct materials yield variance for each input} = \left( \begin{array}{c} \text{Actual total} \\ \text{quantity of} \\ \text{all direct} \\ \text{materials} \\ \text{inputs used} \end{array} - \begin{array}{c} \text{Budgeted total} \\ \text{quantity of all} \\ \text{direct materials} \\ \text{inputs allowed} \\ \text{for actual output} \end{array} \right) \times \begin{array}{c} \text{Budgeted} \\ \text{direct materials} \\ \text{input mix} \\ \text{percentage} \end{array} \times \begin{array}{c} \text{Budgeted} \\ \text{price of} \\ \text{direct materials} \\ \text{input} \end{array}$$

The direct materials yield variances are as follows:

**Latoms:**  $(6,500 - 6,400) \text{ tons} \times 0.50 \times \$70 \text{ per ton} = 100 \times 0.50 \times \$70 = \$3,500 \text{ U}$

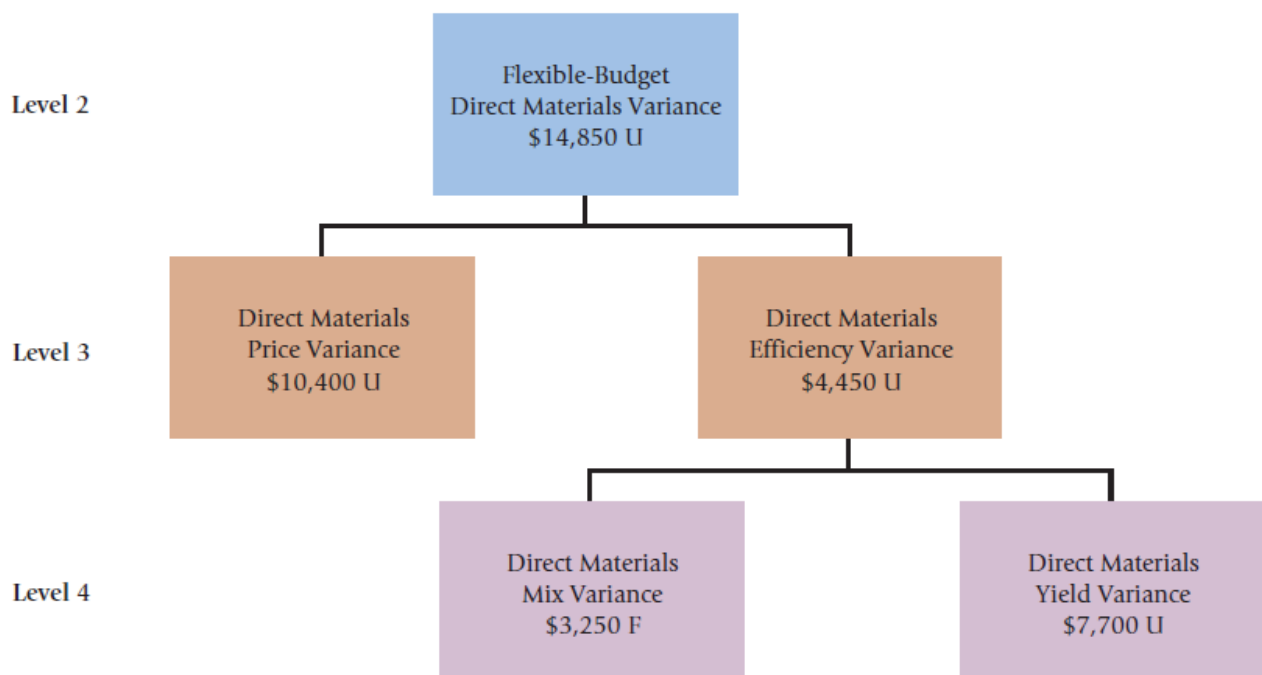
**Caltoms:**  $(6,500 - 6,400) \text{ tons} \times 0.30 \times \$80 \text{ per ton} = 100 \times 0.30 \times \$80 = 2,400 \text{ U}$

**Flotoms:**  $(6,500 - 6,400) \text{ tons} \times 0.20 \times \$90 \text{ per ton} = 100 \times 0.20 \times \$90 = 1,800 \text{ U}$

**Total direct materials yield variance** \$7,700 U

The total direct materials yield variance is unfavorable because Delpino used 6,500 tons of tomatoes rather than the 6,400 tons that it should have used to produce 4,000 tons of ketchup. Holding the budgeted mix and budgeted prices of tomatoes constant, the budgeted cost per ton of tomatoes in the budgeted mix is \$77 per ton. The unfavorable yield variance represents the budgeted cost of using 100 more tons of tomatoes,  $(6,500 - 6,400) \text{ tons} \times \$77 \text{ per ton} = \$7,700 \text{ U}$ . Delpino would want to investigate reasons for this unfavorable yield variance. For example, did the substitution of the cheaper Caltoms for Flotoms that resulted in the favorable mix variance also cause the unfavorable yield variance?

The direct materials variances computed in Exhibits 14-12 and 14-13 can be summarized as follows:







# Glossary

(based on ICMA suggested reading list)



**accounting (book) rate of return** Equals the ratio of some measure of accounting profit to some measure of investment in the project

**Activity variance** The difference between a revenue or cost item in the static planning budget and the same item in the flexible budget. An activity variance is due solely to the difference between the level of activity assumed in the planning budget and the actual level of activity used in the flexible budget

**arm's-length standard** A transfer price set to reflect the price that unrelated parties acting independently would have set

**asset turnover** The amount of sales dollars achieved per dollar of investment; measures the manager's ability to increase sales from a given level of investment

**Autonomy.** The degree of freedom to make decisions.

**Balanced scorecard.** A framework for implementing strategy that translates an organization's mission and strategy into a set of performance measures.

**balanced scorecard (BSC)** An accounting report that includes the firm's critical success factors in four areas: (1) financial performance, (2) customer satisfaction, (3) internal processes, and (4) learning and growth

**Balanced scorecard** An integrated set of performance measures that are derived from and support the organization's strategy.

**budgeted capacity utilization** The planned (forecasted) output for the coming period, usually a year

**Budgeted indirect-cost rate.** Budgeted annual indirect costs in a cost pool divided by the budgeted annual quantity of the cost allocation base.

**Budgeted performance.** Expected performance or a point of reference to compare actual results.

**business analysis** Evaluates the firm's overall performance by using the balanced scorecard, financial ratio analysis and economic value added

**Committed fixed costs** Investments in facilities, equipment, and basic organizational structure that can't be significantly reduced even for short periods of time without making fundamental changes.

**Common cost.** Cost of operating a facility, activity, or like cost object that is shared by two or more users.

**Common cost** A cost that is incurred to support a number of cost objects but that cannot be traced to them individually. For example, the wage cost of the pilot of a 747 airliner is a common cost of all of the passengers on the aircraft. Without the pilot, there would be no flight and no passengers. But no part of the pilot's wage is caused by any one passenger taking the flight.



**Common fixed cost** A fixed cost that supports more than one business segment, but is not traceable in whole or in part to any one of the business segments.

**Control.** Taking actions that implement the planning decisions, deciding how to evaluate performance, and providing feedback and learning that will help future decision making. (10)

**control** The set of procedures, tools, and systems that organizations use to reach their goals

**Control** The process of instituting procedures and then obtaining feedback to ensure that all parts of the organization are functioning effectively and moving toward overall company goals.

**Control** Those steps taken by management to increase the likelihood that all parts of the organization are working together to achieve the goals set down at the planning stage.

**Controlling** Actions taken to help ensure that the plan is being followed and is appropriately modified as circumstances change.

**Controllability.** Degree of influence that a specific manager has over costs, revenues, or related items for which he or she is responsible.

**Controllable cost.** Any cost that is primarily subject to the influence of a given responsibility center manager for a given period.

**controllable cost** A cost that a manager or employee has discretion in choosing to incur or can significantly influence the amount of within a given, usually short, period of time

**controllable fixed costs** Fixed costs that the profit center manager can influence in approximately a year or less

**controllable margin** A margin determined by subtracting short-term controllable fixed costs from the contribution margin

**Controller.** The financial executive primarily responsible for management accounting and financial accounting. Also called *chief accounting officer*.

**Controller** The member of the top management team who is responsible for providing relevant and timely data to managers and for preparing financial statements for external users. The controller reports to the CFO.

**Corporate governance** The system by which a company is directed and controlled. If properly implemented it should provide incentives for top management to pursue objectives that are in the interests of the company and it should effectively monitor performance.

**Cost-application base.** Cost-allocation base when the cost object is a job, product, or customer.

**Cost center.** Responsibility center where the manager is accountable for costs only.

**cost center** A firm's production or support unit that provides the best quality product or service at the lowest cost



**Cost center** A business segment whose manager has control over cost but has no control over revenue or investments in operating assets.

**Cost of capital** The average rate of return a company must pay to its long-term creditors and shareholders for the use of their funds.

**critical success factors (CSFs)** Measures of those aspects of the firm's performance that are essential to its competitive advantage and therefore to its success

**currently attainable standard** A level of performance that workers with proper training and experience can attain most of the time without extraordinary effort

**Customer-profitability analysis.** The reporting and analysis of revenues earned from customers and the costs incurred to earn those revenues.

**customer profitability analysis** Identifies customer service activities, cost drivers, and the profitability of individual customers or groups of customers

**death-spiral effect** Continual raising of selling prices in an attempt to recover fixed costs, in spite of successive decreases in demand; generally described as one of the dangers of cost-plus pricing

**decentralized** A firm that has chosen to delegate a significant amount of responsibility to SBU managers.

**Decentralized organization** An organization in which decision-making authority is not confined to a few top executives but rather is spread throughout the organization.

**Decentralization.** The freedom for managers at lower levels of the organization to make decisions.

**Decentralization** The delegation of decision-making authority throughout an organization by providing managers with the authority to make decisions relating to their area of responsibility.

**Degree of operating leverage** A measure, at a given level of sales, of how a percentage change in sales will affect profits. The degree of operating leverage is computed by dividing contribution margin by net operating income.

**denominator activity level** The output (activity) level used to establish the predetermined fixed overhead application rate; generally defined as *practical capacity*; also called the denominator volume

**denominator volume** The output (activity) level used to calculate the predetermined fixed overhead application rate; generally defined as *practical capacity*; also called the denominator activity level

**Denominator level.** The denominator in the budgeted fixed overhead rate computation.

**Denominator-level variance.** See *production-volume variance*.



**desired rate of return** The minimum rate of return the investing firm requires for an investment

**Directing and motivating** Mobilizing people to carry out plans and run routine operations.

**direct labor efficiency variance** The difference between the actual hours worked and the standard hours allowed for the units manufactured, multiplied by the standard wage rate

**direct labor rate variance** The difference between the actual and standard hourly wage rate multiplied by the actual direct hours worked during the period

**direct materials flexible-budget variance** For each material, the difference between total direct materials cost incurred and the flexible-budget amount for the units manufactured during the period

**direct materials price variance** For each direct material, the difference between the actual and standard unit price of the material multiplied by the actual quantity used

**Direct materials mix variance.** The difference between (1) budgeted cost for actual mix of the actual total quantity of direct materials used and (2) budgeted cost of budgeted mix of the actual total quantity of direct materials used.

**Direct materials yield variance.** The difference between (1) budgeted cost of direct materials based on the actual total quantity of direct materials used and (2) flexible-budget cost of direct materials based on the budgeted total quantity of direct materials allowed for the actual output produced.

**direct materials usage variance** For each material, the difference between the actual units used during the period and the number of standard units that should have been used for the output of the period, multiplied by the standard cost per unit of the direct material

**Discretionary costs.** Arise from periodic (usually annual) decisions regarding the maximum amount to be incurred and have no measurable cause-and-effect relationship between output and resources used.

**Discretionary fixed costs** Those fixed costs that arise from annual decisions by management to spend on certain fixed cost items, such as advertising and research.

**dual allocation** A cost allocation method that separates fixed and variable costs and traces variable service department costs to the user departments; fixed costs are allocated based on either equal shares among departments or a predetermined budgeted proportion

**Dual pricing.** Approach to transfer pricing using two separate transfer-pricing methods to price each transfer from one subunit to another.

**dual pricing** involves the use of multiple prices for an internal transfer or cost allocation, one based on variable cost and one based on fixed cost

**Dual-rate method.** Allocation method that classifies costs in each cost pool into two pools (a variable-cost pool and a fixed cost pool) with each pool using a different cost-allocation base.

**Dysfunctional decision making.** See *suboptimal decision making*.



**Economic value added (EVA®).** After-tax operating income minus the (after-tax) weighted-average cost of capital multiplied by total assets minus current liabilities.

**economic value added (EVA ®)** A measure of financial performance designed to approximate an entity's economic profit; calculated most often as net operating profit after-taxes (adjusted for accounting "distortions") less an imputed charge based on the level of invested capital

**Effectiveness.** The degree to which a predetermined objective or target is met.

**effective operation** The attainment of the goal set for the operation

**Efficiency.** The relative amount of inputs used to achieve a given output level.

**Efficiency variance.** The difference between actual input quantity used and budgeted input quantity allowed for actual output, multiplied by budgeted price. Also called *usage variance*.

**Effort.** Exertion toward achieving a goal.

**employment contract** An agreement between the manager and top management, designed to provide incentives for the manager to act autonomously to achieve top management's objectives

**enterprise risk management** A framework and process that firms use to manage the risks that could negatively or positively affect the company's competitiveness and success

**Enterprise risk management** A process used by a company to help identify the risks that it faces and to develop responses to those risks that enable the company to be reasonably assured of meeting its goals.

**Favorable variance.** Variance that has the effect of increasing operating income relative to the budgeted amount. Denoted F.

**factory overhead applied** The amount of overhead assigned to a cost object using a predetermined factory overhead rate

**Feedback** Accounting and other reports that help managers monitor performance and focus on problems and/or opportunities that might otherwise go unnoticed.

**financial control** The comparison between actual and budgeted financial results

**fixed overhead application rate** A term used for product costing purposes; the rate at which fixed overhead is charged to production per unit of activity (or output)

**fixed overhead production volume variance** The difference between budgeted fixed overhead and the standard fixed overhead applied to production (using the fixed overhead allocation rate); also called the production volume variance

**fixed overhead spending (budget) variance** The difference between budgeted and actual fixed factory overhead costs for a period



**Fixed overhead flexible-budget variance.** The difference between actual fixed overhead costs and fixed overhead costs in the flexible budget.

**Fixed overhead spending variance.** Same as the fixed overhead flexible-budget variance. The difference between actual fixed overhead costs and fixed overhead costs in the flexible budget.

**fixed performance contract** An incentive compensation plan whereby compensation is a function of actual performance compared to a fixed (budgeted) target

**Flexible budget.** Budget developed using budgeted revenues and budgeted costs based on the actual output in the budget period.

**flexible budget** A budget that adjusts revenues and costs to the actual output level achieved

**Flexible budget** A report showing estimates of what revenues and costs should have been, given the actual level of activity for the period.

**flexible-budget (FB) variance** The difference between actual and flexible-budget amounts on the income statement

**Flexible-budget variance.** The difference between an actual result and the corresponding flexible-budget amount based on the actual output level in the budget period.

**goal congruence** The consistency between the goals of the firm and the goals of its employees. It is achieved when the manager acts independently in such a way as to simultaneously achieve top management's objectives

**Goal congruence.** Exists when individuals and groups work toward achieving the organization's goals. Managers working in their own best interest take actions that align with the overall goals of top management.

**hurdle rate** The minimum acceptable rate of return on an investment for capital-budgeting purposes, also referred to as the *required rate of return*

**ideal standard** A standard that reflects perfect implementation and maximum efficiency in every aspect of the operation

**Ideal standards** Standards that assume peak efficiency at all times.

**Incongruent decision making.** See *suboptimal decision making*.

**Incremental cost-allocation method.** Method that ranks the individual users of a cost object in the order of users most responsible for the common cost and then uses this ranking to allocate cost among those users.

**Input-price variance.** See *price variance*.

**Intermediate product.** Product transferred from one subunit to another subunit of an organization. This product may either be further worked on by the receiving subunit or sold to an external customer.





**internal accounting controls** A set of policies and procedures that restrict and guide activities in the processing of financial data with the objective of preventing or detecting errors and fraudulent acts

**Investment.** Resources or assets used to generate income.

**Investment center.** Responsibility center where the manager is accountable for investments revenues, and costs.

**investment center** A business unit that includes in its financial performance metric the level assets (capital) employed by the unit as well as profit generated by that unit

**Investment center** A business segment whose manager has control over cost, revenue, and investments in operating assets.

**Labor efficiency variance** The difference between the actual hours taken to complete a task and the standard hours allowed for the actual output, multiplied by the standard hourly labor rate.

**Labor rate variance** The difference between the actual hourly labor rate and the standard rate, multiplied by the number of hours worked during the period.

**Line management.** Managers (for example, in production, marketing, or distribution) who are directly responsible for attaining the goals of the organization.

**management accounting and control system** An organization's core performance-measurement system

**Management by exception.** Practice of focusing management attention on areas not operating as expected and giving less attention to areas operating as expected.

**Management by exception** A management system in which standards are set for various activities, with actual results compared to these standards. Significant deviations from standards are flagged as exceptions.

**Management control system.** Means of gathering and using information to aid and coordinate the planning and control decisions throughout an organization and to guide the behavior of its managers and employees.

**management control** The evaluation of mid-level managers by upper-level managers

**Manufacturing overhead allocated.** Amount of manufacturing overhead costs allocated to individual jobs, products, or services based on the budgeted rate multiplied by the actual quantity used of the cost-allocation base. Also called *manufacturing overhead applied*.

**Manufacturing overhead applied.** See *manufacturing overhead allocated*.

**Manufacturing overhead budget** A detailed plan showing the production costs, other than direct materials and direct labor, that will be incurred over a specified time period.





**Market-share variance.** The difference in budgeted contribution margin for actual market size in units caused solely by actual market share being different from budgeted market share.

**Market-size variance.** The difference in budgeted contribution margin at the budgeted market share caused solely by actual market size in units being different from budgeted market size in units.

**market-price method** A transfer price set as the current price of the product in the external market

**market share variance** A comparison of the firm's actual market share to its budgeted market share and measurement of the effect of changes in the firm's market share on its total contribution margin and operating income

**market size variance** A measure of the effect of changes in the total market size on the firm's total contribution margin and operating income

**master (static) budget variance** The difference between actual operating income and the master budget operating income for a period; also called the **operating-income variance**

**Master-budget capacity utilization.** The expected level of capacity utilization for the current budget period (typically one year).

**Materials price variance** The difference between the actual unit price paid for an item and the standard price, multiplied by the quantity purchased.

**materials usage ratio** The ratio of the quantity used to the quantity purchased

**Materials quantity variance** The difference between the actual quantity of materials used in production and the standard quantity allowed for the actual output, multiplied by the standard price per unit of materials.

**Motivation.** The desire to attain a selected goal (the goal congruence aspect) combined with the resulting pursuit of that goal (the effort aspect).

**negotiated-price method** The determination of a transfer price through a negotiation process and sometimes arbitration between units

**noncontrollable fixed costs** Costs that are not controllable within a year's time, usually including facilities-related costs such as depreciation, taxes, and insurance

**normal capacity** The expected average demand per year over an intermediate term, for example, the upcoming three to five years

**Normal capacity utilization.** The level of capacity utilization that satisfies average customer demand over a period (say, two to three years) that includes seasonal, cyclical, and trend factors.



**Normal costing.** A costing system that traces direct costs to a cost object by using the actual direct-cost rates times the actual quantities of the direct-cost inputs and that allocates indirect costs based on the budgeted indirect-cost rates times the actual quantities of the cost-allocation bases.

**Normal cost system** A costing system in which overhead costs are applied to a job by multiplying a predetermined overhead rate by the actual amount of the allocation base incurred by the job.

**Operating assets** Cash, accounts receivable, inventory, plant and equipment, and all other assets held for operating purposes.

**operating-income variance** The difference between the actual operating income of the period and the master budget operating income projected for the period; also referred to as the **master**

**(static) budget variance** for the period

**operational control** The monitoring of short-term operating performance; takes place when mid-level managers monitor the activities of operating-level managers and employees

**operational productivity** The ratio of output to the number of units of an input factor

**Operating income.** Total revenues from operations minus cost of goods sold and operating costs (excluding interest expense and income taxes).

**Operating-income volume variance.** The difference between static-budget operating income and the operating income based on budgeted profit per unit and actual units of output.

**Operating leverage** A measure of how sensitive net operating income is to a given percentage change in dollar sales.

**operating leverage** The ratio of the contribution margin to operating profit at a given level of output. Also called the degree of operating leverage (DOL).

**Opportunity cost.** The contribution to operating income that is forgone or rejected by not using a limited resource in its next-best alternative use.

**opportunity cost** The benefit lost when choosing one option precludes receiving the benefits from an alternative option

**Opportunity cost** The potential benefit that is given up when one alternative is selected over another.

**Out-of-pocket costs** Actual cash outlays for salaries, advertising, repairs, and similar costs.

**Overabsorbed indirect costs.** See *overallocated indirect costs*.

**overapplied overhead** The amount of factory overhead applied that exceeds the actual factory overhead cost



**overhead** All the indirect costs commonly combined into a single cost pool

**overhead application or allocation** A process of allocating overhead costs to cost objects

**overtime premium** The excess wage rate over the standard hourly wage rate

**Overallocated indirect costs.** Allocated amount of indirect costs in an accounting period is greater than the actual (incurred) amount in that period. Also called *overapplied indirect costs* and *overabsorbed indirect costs*.

**Overapplied indirect costs.** See *overallocated indirect costs*.

**Overapplied overhead** A credit balance in the Manufacturing Overhead account that occurs when the amount of overhead cost applied to Work in Process exceeds the amount of overhead cost actually incurred during a period. (p. 109)

**Overhead application** The process of charging manufacturing overhead cost to job cost sheets and to the Work in Process account.

**Partial productivity.** Measures the quantity of output produced divided by the quantity of an individual input used.

**partial productivity** A productivity measure that focuses only on the relationship between one of the inputs and the output attained

**participative standards** Active participation throughout the standard-setting process by employees affected by the standards

**performance evaluation** The process by which managers at all levels gain information about the performance of tasks within the firm and judge that performance against pre-established criteria as set out in budgets, plans, and goals

**performance measurement** A measurement that identifies items that indicate the work performed and the results achieved by an activity, process, or organizational unit

**Performance report** A detailed report comparing budgeted data to actual data.

**Planning and control cycle** The flow of management activities through planning, directing and motivating, and controlling, and then back to planning again.

**Practical capacity.** The level of capacity that reduces theoretical capacity by unavoidable operating interruptions such as scheduled maintenance time, shutdowns for holidays, and so on.

**practical capacity** Theoretical capacity reduced by normal output losses due to personal time, normal maintenance, and so on; the measure of capacity used to estimate cost-driver rates under ABC and TDABC systems

**Practical standards** Standards that allow for normal machine downtime and other work interruptions and that can be attained through reasonable, though highly efficient, efforts by the average worker.



**predetermined factory overhead rate** An estimated rate used to apply factory overhead cost to a cost object

**Predetermined overhead rate** A rate used to charge manufacturing overhead cost to jobs that is established in advance for each period. It is computed by dividing the estimated total manufacturing overhead cost for the period by the estimated total amount of the allocation base for the period.

**principal-agent model** A conceptual model that contains the key elements that contracts must have to achieve the desired objectives

**Price variance.** The difference between actual price and budgeted price multiplied by actual quantity of input. Also called *input-price variance* or *rate variance*.

**Price variance** A variance that is computed by taking the difference between the actual price and the standard price and multiplying the result by the actual quantity of the input.

**production volume variance** Represents the over- or underapplied budgeted fixed overhead for the period, that is, the difference between the fixed overhead costs applied to production and the (lump-sum) budgeted fixed overhead for the period; also called fixed overhead production volume variance

**Production-denominator level.** The denominator in the budgeted manufacturing fixed overhead rate computation.

**Production-volume variance.** The difference between budgeted fixed overhead and fixed overhead allocated on the basis of actual output produced. Also called *denominator level variance*.

**productivity** The ratio of output to input

**Productivity.** Measures the relationship between actual inputs used (both quantities and costs) and actual outputs produced; the lower the inputs for a given quantity of outputs or the higher the outputs for a given quantity of inputs, the higher the productivity.

**Productivity component.** Change in costs attributable to a change in the quantity of inputs used in the current period relative to the quantity of inputs that would have been used in the prior period to produce the quantity of current period output.

**Profit center.** Responsibility center where the manager is accountable for revenues and costs.

**profit center** A business unit whose manager is responsible for revenues and expenses, but not the level of invested capital, in the unit

**Profit t center** A business segment whose manager has control over cost and revenue but has no control over investments in operating assets.

**Proration.** The spreading of underallocated manufacturing overhead or overallocated manufacturing overhead among ending work in process, finished goods, and cost of goods sold.



**Quantity variance** A variance that is computed by taking the difference between the actual quantity of the input used and the amount of the input that should have been used for the actual level of output and multiplying the result by the standard price of the input.

**Rate variance.** See *price variance*.

**Required rate of return (RRR).** The minimum acceptable annual rate of return on an investment. Also called the *discount rate*, *hurdle rate*, *cost of capital*, or *opportunity cost of capital*.

**Residual income (RI).** Accounting measure of income minus a dollar amount for required return on an accounting measure of investment.

**Residual income** The net operating income that an investment center earns above the minimum required return on its operating assets.

**residual income (RI)** A dollar amount equal to the income of a business unit less a charge for the level of investment in the division

**Responsibility accounting.** System that measures the plans, budgets, actions, and actual results of each responsibility center.

**Responsibility accounting** A system of accountability in which managers are held responsible for those items of revenue and cost—and only those items—over which they can exert significant control. The managers are held responsible for differences between budgeted and actual results.

**Responsibility center.** Part, segment, or subunit of an organization whose manager is accountable for a specified set of activities.

**Responsibility center** Any business segment whose manager has control over costs, revenues, or investments in operating assets.

**resale-price method** A transfer-pricing method based on determining an appropriate markup based on gross profits of unrelated firms selling similar products

**resource** An economic element applied or used to perform activities

**resource-capacity planning** Procedures used to ensure adequate but not excessive supply of capacity-related resources

**resource consumption cost driver** An activity or characteristic that consumes resources

**Return on investment (ROI).** An accounting measure of income divided by an accounting measure of investment. See also *accrual accounting rate of return method*.

**Return on investment (ROI)** Net operating income divided by average operating assets. It also equals margin multiplied by turnover.

**return on investment (ROI)** Some measure of profit divided by some measure of investment in a business unit



**return on sales (ROS)** A firm's profit per sales dollar; measures the manager's ability to control expenses and increase revenues to improve profitability

**Revenue center.** Responsibility center where the manager is accountable for revenues only.

**revenue center** A business unit with responsibility for sales, defined either by product line or by geographical area and focuses on the selling function

**revenue drivers** The factors that affect sales volume, such as price changes, promotions, discounts, customer service, changes in product features, delivery dates, and other value added factors

**Revenue driver.** A variable, such as volume, that causally affects revenues.

**Revenues.** Inflows of assets (usually cash or accounts receivable) received for products or services provided to customers.

**Revenue variance** The difference between how much the revenue should have been, given the actual level of activity, and the actual revenue for the period. A favorable (unfavorable) revenue variance occurs because the revenue is higher (lower) than expected, given the actual level of activity for the period.

**sales mix** The proportion of units (or dollars) of each product or service to the total of all products or services

**Sales mix.** Quantities of various products or services that constitute total unit sales.

**Sales mix** The relative proportions in which a company's products are sold. Sales mix is computed by expressing the sales of each product as a percentage of total sales.

**sales mix variance** The product of the difference between the actual and budgeted sales mix multiplied by the actual total number of units of all products sold, and by the budgeted contribution margin per unit of the product

**Sales-mix variance.** The difference between (1) budgeted contribution margin for the actual sales mix, and (2) budgeted contribution margin for the budgeted sales mix.

**Sales-quantity variance.** The difference between (1) budgeted contribution margin based on actual units sold of all products at the budgeted mix and (2) contribution margin in the static budget (which is based on the budgeted units of all products to be sold at the budgeted mix).

**sales quantity variance** The product of three elements: (1) the difference between the budgeted and actual total sales quantity, (2) the budgeted sales mix of the product, and (3) the budgeted contribution margin per unit of the product. It measures the effect of the change in the number of units sold from the number of units budgeted to be sold

**sales volume variance** The difference between the flexible budget amount for that item and the amount for that item reflected in the master budget for the period for each income statement item





**Sales-volume variance.** The difference between a flexible-budget amount and the corresponding static-budget amount.

**Sarbanes-Oxley Act of 2002** Legislation enacted to protect the interests of stockholders who invest in publicly traded companies by improving the reliability and accuracy of the disclosures provided to them.

**Segment** Any part or activity of an organization about which managers seek cost, revenue, or profit data.

**Segment margin** A segment's contribution margin less its traceable fixed costs. It represents the margin available after a segment has covered all of its own traceable costs.

**Selling-price variance.** The difference between the actual selling price and the budgeted selling price multiplied by the actual units sold.

**selling price variance** The difference between the total actual sales revenue and the total flexible-budget sales revenue for the units sold during a period

**Semivariable cost.** See *mixed cost*.

**Single-rate method.** Allocation method that allocates costs in each cost pool to cost objects using the same rate per unit of a single allocation base.

**Spending variance.** The difference between how much a cost should have been, given the actual level of activity, and the actual amount of the cost. A favorable (unfavorable) spending variance occurs because the cost is lower (higher) than expected, given the actual level of activity for the period.

**Stand-alone cost-allocation method.** Method that uses information pertaining to each user of a cost object as a separate entity to determine the cost-allocation weights.

**Stand-alone revenue-allocation method.** Method that uses product-specific information on the products in the bundle as weights for allocating the bundled revenues to the individual products.

**Standard.** A carefully determined price, cost, or quantity that is used as a benchmark for judging performance. It is usually expressed on a per unit basis.

**Standard cost.** A carefully determined cost of a unit of output.

**standard cost** The cost a firm should incur for an operation

**Standard cost card** A detailed listing of the standard amounts of inputs and their costs that are required to produce a unit of a specific product.

**standard cost sheet** A listing of the standard price and quantity of each manufacturing cost element for the production of one unit of a product

**standard cost system** One in which standard, not actual, costs flow through the formal accounting records



**Standard costing.** Costing system that traces direct costs to output produced by multiplying the standard prices or rates by the standard quantities of inputs allowed for actual outputs produced and allocates overhead costs on the basis of the standard overhead-cost rates times the standard quantities of the allocation bases allowed for the actual outputs produced.

**Standard cost per unit** The standard quantity allowed of an input per unit of a specific product, multiplied by the standard price of the input.

**Standard hours allowed** The time that should have been taken to complete the period's output. It is computed by multiplying the actual number of units produced by the standard hours per unit.

**Standard hours per unit** The amount of direct labor time that should be required to complete a single unit of product, including allowances for breaks, machine downtime, cleanup, rejects, and other normal inefficiencies.

**Standard price per unit** The price that should be paid for an input. The price should be net of discounts and should include any shipping costs.

**Standard quantity allowed** The amount of an input that should have been used to complete the period's actual output. It is computed by multiplying the actual number of units produced by the standard quantity per unit.

**Standard quantity per unit** The amount of an input that should be required to complete a single unit of product, including allowances for normal waste, spoilage, rejects, and other normal inefficiencies.

**Standard rate per hour** The labor rate that should be incurred per hour of labor time, including employment taxes and fringe benefits.

**Standard input.** A carefully determined quantity of input required for one unit of output.

**Standard price.** A carefully determined price that a company expects to pay for a unit of input.

**static budget variance** (See **master budget variance**)

**statistical control charts** Charts that set control limits using a statistical procedure

**Static budget.** Budget based on the level of output planned at the start of the budget period.

**Static-budget variance.** Difference between an actual result and the corresponding budgeted amount in the static budget.

**strategic business unit (SBU)** A well-defined set of controllable operating activities over which an SBU manager is responsible

**strategic control system** The processes and procedures organizations use to monitor progress toward strategic goals of the organization





**strategic performance measurement** An accounting system used by top management for the evaluation of SBU managers

**Suboptimal decision making.** Decisions in which the benefit to one subunit is more than offset by the costs or loss of benefits to the organization as a whole. Also called *incongruent decision making* or *dysfunctional decision making*.

**Super-variable costing.** See *throughput costing*.

**Target rate of return on investment.** The target annual operating income that an organization aims to achieve divided by invested capital.

**Theoretical capacity.** The level of capacity based on producing at full efficiency all the time.

**theoretical capacity** A measure of capacity (output or activity) that assumes 100 percent efficiency; maximum possible output (or activity)

**Total factor productivity (TFP).** The ratio of the quantity of output produced to the costs of all inputs used, based on current period prices.

**total fixed overhead variance** The difference between actual fixed overhead costs for the period and the standard fixed overhead costs charged to production for the period; this variance can be broken down into a fixed overhead spending variance and a fixed overhead production volume variance

**total flexible-budget (FB) variance** The difference between the flexible-budget operating income and the actual operating income for the period

**total flexible-budget variance for overhead** The difference between the actual overhead for a period and the flexible budget for overhead based on *output*

**total productivity** A measure including all input resources in computing the ratio of the output attained and the input used to attain the output

**total variable cost flexible-budget (FB) variance** The difference between variable costs incurred and the total variable costs in the flexible budget for the period

**total variable overhead variance** The difference between actual variable overhead cost incurred and the standard variable overhead cost applied to production; also called “over- or underapplied variable overhead” for the period

**Total-overhead variance.** The sum of the flexible-budget variance and the production-volume variance.

**Traceable fixed cost** A fixed cost that is incurred because of the existence of a particular business segment and that would be eliminated if the segment were eliminated.

**Transfer price.** Price one subunit (department or division) charges for a product or service supplied to another subunit of the same organization.

**transfer pricing** The determination of an exchange price for a product or service when different business units within a firm exchange it



**Underabsorbed indirect costs.** See *underallocated indirect costs*.

**Underallocated indirect costs.** Allocated amount of indirect costs in an accounting period is less than the actual (incurred) amount in that period. Also called *underapplied indirect costs* or *underabsorbed indirect costs*. (118)

**Underapplied indirect costs.** See *underallocated indirect costs*. (118)

**underapplied overhead** The amount that actual factory overhead exceeds the factory overhead applied

**Underapplied overhead** A debit balance in the Manufacturing Overhead account that occurs when the amount of overhead cost actually incurred exceeds the amount of overhead cost applied to Work in Process during a period.

**Unfavorable variance.** Variance that has the effect of decreasing operating income relative to the budgeted amount. Denoted U.

**Unused capacity.** The amount of productive capacity available over and above the productive capacity employed to meet consumer demand in the current period.

**Usage variance.** See *efficiency variance*.

**Variable overhead efficiency variance** The difference between the actual level of activity (direct labor-hours, machine-hours, or some other base) and the standard activity allowed, multiplied by the variable part of the predetermined overhead rate.

**Variable overhead efficiency variance.** The difference between the actual quantity of variable overhead cost-allocation base used and budgeted quantity of variable overhead cost-allocation base that should have been used to produce actual output, multiplied by budgeted variable overhead cost per unit of cost allocation base.

**Variable overhead flexible-budget variance.** The difference between actual variable overhead costs incurred and flexible budget variable overhead amounts.

**Variable overhead spending variance.** The difference between actual variable overhead cost per unit and budgeted variable overhead cost per unit of the cost-allocation base, multiplied by actual quantity of variable overhead cost-allocation base used for actual output.

**Variable overhead rate variance** The difference between the actual variable overhead cost incurred during a period and the standard cost that should have been incurred based on the actual activity of the period.

**Variance.** The difference between actual result and expected performance.

**variable expense flexible-budget variance** The difference between the actual variable expenses incurred and the total standard variable expenses in the flexible budget for the units sold during the period



**variable overhead efficiency variance** The difference between the flexible budget for variable overhead based on *inputs* (e.g., actual labor hours worked) and the flexible budget for variable overhead based on *outputs* (i.e., standard allowed labor hours for units produced)

**variable overhead spending variance** The difference between actual variable overhead cost incurred and the flexible budget for variable overhead based on *inputs* for the period (e.g., actual labor hours worked)

**variances** The differences between budgeted and actual amounts, for either financial or nonfinancial measures

**weighted-average cost of capital (WACC)** An average of the (after-tax) cost of debt and equity capital for a firm; in general, the WACC is the appropriate discount rate to use for future cash flows associated with “average risk” projects



# Self Assessment Quiz

**COST ACCUMULATION SYSTEMS**

Cost accumulation systems are used to assign costs to products. The system used is driven by the cost object involved. If the cost object is a custom order, **job** costing is used. If the cost object is a mass-produced homogeneous product (e.g. .steel), **process** costing is used.

**PASS KEY**

Although the most commonly tested cost accumulation systems are job-order costing and process costing, there are many variations of cost accumulation systems that may appear en your examination:

- .Operations costing uses components of both job-order costing and process costing.
- .Backflush costing accounts for certain costs at the end of the process in circumstances where there is little need for in-process inventory valuation.

Life-cycle costing seeks to monitor costs throughout the product's life cycle and expand on the traditional costing systems that focus only on the manufacturing phase of a product's life.

52. A specialty instrument manufacturer is in the process of establishing a cost system. The company produces machines for customers that are unique and distinctive. These machines are produced when purchase requests are received from customers. Although some common parts and sub-assemblies are to be held in inventory, no finished goods inventory is maintained since each purchase request is for a customized specialty instrument. The type of cost accumulation system that would be **best** suited for this type of environment would be

- a. backflush costing.
- b. batch-level costing.
- c. job order costing.
- d. process costing.

52. c

**JOB-ORDER COSTING (cost accumulation system)**

Job-order costing (or job costing) is the method of product costing that identifies the job (or individual units or batches) as the cost objective and is used when there are relatively few units produced and when each unit is unique or easily identifiable.

**Cost Objective Is the Job (or unit)**

Under job-order costing, cost is allocated to a specific job as it moves through the manufacturing process. Record keeping for job-costing emphasizes the job as the cost objective.

**Cost Measurement: Actual, Normal, or Standard Costing?**

Costs in either a job or process costing system can be measured in their actual, normal, or standard amount.

Costing System	Types of Cost Used For		
	Direct Materials	Direct Labor	Factory Overhead
Actual costing	Actual cost	Actual cost	Actual cost
Normal costing	Actual cost	Actual cost	Estimated overhead cost (using predetermined rate(s))
Standard costing	Standard cost	Standard cost	Standard cost



**Exhibit 4-5**

**Actual Costing and  
Normal Costing  
Methods**

	Actual Costing	Normal Costing
<b>Direct Costs</b>	$\text{Actual direct-cost rates} \times \text{actual quantities of direct-cost inputs}$	$\text{Actual direct-cost rates} \times \text{actual quantities of direct-cost inputs}$
<b>Indirect Costs</b>	$\text{Actual indirect-cost rates} \times \text{actual quantities of cost-allocation bases}$	$\text{Budgeted indirect-cost rates} \times \text{actual quantities of cost-allocation bases}$

Using actual costing, the company could not know the cost or the profitability of each job when it is completed during the period, but only at the end of the period, and then the company would know the profitability of all the jobs combined. Most companies, like TFI, need to know for management planning and control purposes the cost and profitability of each job as it is completed, so they use normal costing rather than actual costing.(Blocher)

**Example (Robinson Company):**

Assume the following costs related to job 298

- Direct materials : \$4,606 (actual cost)
- Direct manufacturing labor : \$1,579 (actual cost).
- Direct manufacturing labor hours for job 298 = 88 H (*Robinson, however, chooses direct manufacturing labor-hours as the sole allocation base*)
- Robinson records 27,000 actual direct manufacturing labor-hours.
- Actual manufacturing overhead costs = \$1,215,000
- Robinson Budgeted annual indirect costs = \$1,120,000
- Total direct Budgeted manufacturing labor-hours = 28,000

**Required:**

Calculate the total manufacturing costs of job 298 using actual and normal method.



At the beginning of the period:

$$\boxed{\text{Estimated total manufacturing overhead cost}} \div \boxed{\text{Estimated total amount of the allocation base}} = \boxed{\text{Predetermined overhead rate}}$$

During the period:

$$\boxed{\text{Predetermined overhead rate}} \times \boxed{\text{Actual total amount of the allocation base incurred during the period}} = \boxed{\text{Total manufacturing overhead applied}}$$

At the end of the period:

$$\boxed{\text{Actual total manufacturing overhead cost}} - \boxed{\text{Total manufacturing overhead applied}} = \boxed{\text{Underapplied (overapplied) overhead}}$$

23. Huntley Company has two departments, Machining and Assembly, at its Milwaukee plant. This year's budget for the plant contained the following information.

	Machining	Assembly
Manufacturing overhead	\$4,000,000	\$2,000,000
Direct labor hours	100,000	200,000
Machine hours	40,000	40,000

Assume the Milwaukee plant uses machine hours as the overhead base in machining and direct labor in Assembly. If Job 2420 uses 20 direct labor hours in each department, 10 machine hours in Machining and 5 machine hours in Assembly, how much overhead would be assigned to the job?

- a. \$1,100.
- b. \$1,200.
- c. \$2,100.
- d. \$2,200.

23. b

#### Budgeted Indirect Costs and End-of-Accounting- Year Adjustments

If Factory Overhead is . . .	<u>Alternative 1</u> Allocation	<u>Alternative 2</u> Close to Cost of Goods Sold
<b>UNDERAPPLIED</b> (Applied OH is less than actual OH)	<b>INCREASE</b> Work in Process Finished Goods Cost of Goods Sold	<b>INCREASE</b> Cost of Goods Sold
<b>OVERAPPLIED</b> (Applied OH is greater than actual OH)	<b>DECREASE</b> Work in Process Finished Goods Cost of Goods Sold	<b>DECREASE</b> Cost of Goods Sold



52. Which one of the following is a variance that could appear if a company uses a normal costing system?

- a. Direct material price variance.
- b. Direct labor efficiency variance.
- c. Variable overhead spending variance.
- d. Variable overhead efficiency variance.

52. c

52. Lemmon Corporation's results for the past year are shown below.

Cost of goods available for sale	\$136,000
Ending balance, raw material inventory	6,000
Ending balance, work-in-process inventory	14,000
Ending balance, finished goods inventory	13,000
Manufacturing overhead applied	50,000
Actual manufacturing overhead	55,000

If Lemmon prorates any overapplied or underapplied overhead at the end of the year, cost of goods sold after proration would total

- a. \$140,150.
- b. \$127,100.
- c. \$126,950.
- d. \$118,900.

52. b

61. Information regarding Parrett Company's year-end account balances is shown below.

	Account Balance (Before Proration)	Allocated Overhead in Each Balance
Direct material inventory	\$ 100,000	\$ 0
Work-in-process inventory	25,000	10,000
Finished goods inventory	225,000	100,000
Cost of goods sold	2,250,000	890,000

If Parrett's overhead was overapplied by \$90,000 and the company uses the most accurate method of prorating overapplied or underapplied overhead, the balance in the cost of goods sold account after proration would be

- a. \$2,169,000.
- b. \$2,169,900.
- c. \$2,172,115.
- d. \$2,330,100.

61. b





### Accounting for Normal/Abnormal spoilage under job-order costing

Normal spoilage should be part of the normal cost of manufacturing goods and should be charged to good units produced. Abnormal spoilage, not a part of normal operations, should be expensed as a period cost when detected.

Under job-order costing, unit manufacturing cost is unaffected by abnormal spoilage. Abnormal spoilage should be written-off to a special account that is separately reported in the income statement. The cost associated with abnormal spoilage is expensed in the period in which it is incurred.

186. CSO: 1C2a LOS: 1C2c

Darden Manufacturing, a calendar-year corporation, had \$17,000 of spoilage during April that production management characterized as abnormal. The spoilage was incurred on Job No. 532, that was sold three months later for \$459,000. Which of the following correctly describes the impact of the spoilage on Darden's unit manufacturing cost for Job No. 532 and on the year's operating income?

Unit Manufacturing	Cost Operating Income
a. Increase.	No effect.
b. Increase.	Decrease.
c. No effect.	Decrease.
d. No effect.	Not enough information to judge.

186. Correct answer c

### Standard Cost System

Recall that in the job-order costing we applied overhead to work in process on the basis of the **actual level of activity**. This procedure was correct because at the time we were dealing with a **normal cost system**. However, we are now dealing with a standard cost system. In such a system, overhead is applied to work in process on the basis of:

*the standard hours allowed for the actual output of the period rather than on the basis of the actual number of hours worked.*

*In a standard cost system, every unit of a particular product is charged with the same amount of overhead cost, regardless of how much time the unit actually requires for processing.*

[10] Gleim #: 3.5.105 -- Source: CMA 0205 2-28

Wagner Corporation applies factory overhead based upon machine hours. At the beginning of the year, Wagner budgeted factory overhead at \$250,000 and estimated that 100,000 machine hours would be used to make 50,000 units of product. During the year, the company produced 48,000 units using 97,000 machine hours. Actual overhead for the year was \$252,000. Under a standard cost system, the amount of factory overhead applied during the year was

- A. \$240,000
- B. \$242,500
- C. \$250,000
- D. \$252,000



Answer (A) is correct. Wagner's application rate for overhead is \$2.50 per machine hour (\$250,000 budgeted total ÷ 100,000 estimated machine hours), and each unit of output is estimated to require 2 machine hours (100,000 estimated machine hours ÷ 50,000 units budgeted output). Under a standard cost system, the amount of overhead applied during the year was therefore \$240,000 (48,000 units actual output × \$2.50 per machine hour application rate × 2 machine hours standard per unit).

48. Consider the cost of goods sold calculation shown below.

Beginning inventory	\$ 100,000
Plus cost of goods manufactured	2,500,000
Less ending inventory	(125,000)
Plus variable overhead efficiency variance	10,000
Cost of goods sold	\$2,485,000

This is an example of which cost measurement technique?

- a. Normal costing.
- b. Standard costing.
- c. Either actual costing or normal costing.
- d. Either normal costing or standard costing.

48. d

3. Jay Company uses a standard cost system. During the past year, the variances from standard were significant. Jay is considering whether to allocate the variances among the appropriate inventory accounts and cost of goods sold, or to allocate all of the variances directly to cost of goods sold. Under which one of the following situations would reported net income be largest?

- a. All of the variances are favorable and are written off directly to cost of goods sold.
- b. All of the variances are unfavorable and are written off directly to cost of goods sold.
- c. All of the variances are favorable and are allocated among cost of goods sold and ending inventory accounts.
- d. All of the variances are unfavorable and are allocated among cost of goods sold and ending inventory accounts.

3. a

59. If Moore Corporation used a normal cost system, applying overhead based on the number of units produced, the variance that could arise that would not be present under an actual cost system is the

- a. direct material efficiency variance.
- b. direct labor efficiency variance.
- c. variable overhead efficiency variance.
- d. fixed overhead production volume variance.

59. d



## II. ACTUAL/NORMAL/STANDARD COSTS

Once a cost accumulation system (e.g. job order costing, process costing, etc.) has been chosen, the decision of which cost measurement method to use must be made. Cost measurement methods for product costing can use actual costing, normal costing, or standard costing, and they often focus on the allocation of overhead costs. The measurement method used will impact the decisions made by a firm for its operations and strategic planning, so the decision as to which method to use will depend on many factors. These factors may include the nature of industry and/or of product or service, the strategy of the firm, and whether or not the system is cost-beneficial.

### A. STRATEGIC VALUE OF COST INFORMATION

It is critically important for management to have the ability to obtain timely and accurate costing information so that the decisions may have a positive effect on the operations of the firm. Further, there is often a trade-off between accuracy and timeliness of information. While accurate information is generally preferred it may arrive too late to have been instrumental in making appropriate business decisions for the firm. Often, a process that provides reliable information in a fast and efficient manner is more valuable than accurate but late information. The strategic value of cost information (as it relates to products and services pricing strategy, allocation of costs to products, etc.) is enhanced by decisions to use proper overall costing systems.

### B. ACTUAL COSTING

Actual costing uses actual costs incurred for all product costs including the indirect (overhead) costs.

#### 1. Calculations

##### a. Direct Costs

Actual price x Actual quantity = Actual direct costs

##### b. Indirect (Overhead) Costs

Actual price x Actual quantity = Actual indirect costs

#### 2. Rarely Used by Firms

The actual costing system is used rarely by firms. Reasons for this include:

##### a. Lack of Timeliness of Information :

Actual costs are not always easy to determine. In fact, certain overhead costs are not even determined until significantly far along in the production process, when it is too late for the information to have made an impact on strategic planning decisions.

##### b. Large Fluctuations in Costs from Period to Period

Because actual costs are considered, significant fluctuations in total product cost can exist especially due to fluctuations in overhead. This fluctuation may lead to serious problems with pricing (and other product decisions) and performance evaluations.

### C. NORMAL COSTING

Normal costing uses actual costs for direct material and direct labor but uses normal costs for overhead by applying a predetermined overhead allocation rate based on an applicable cost driver. The allocation rate is calculated by dividing the total budgeted overhead amount by the budgeted volume. Then, the actual quantity of the cost allocation base (cost driver) is multiplied by the budgeted application rate.



### **1. Calculations**

#### **a. Direct Costs**

Actual price x Actual quantity = Actual direct costs

#### **b. Indirect (Overhead Costs)**

Standard (predetermined) rate x Actual quantity = Normal Indirect costs

### **2. Solves Some Problems with Actual Costing**

Normal costing is a system that attempts to solve some of the problems associated with actual costing.

#### **a. Timeliness of Information**

Typically, the actual costs for direct materials and direct labor are readily available, but (as mentioned above) the actual costs for overhead can take some time to gather. The use of predetermined overhead allocation rates for the overhead component in normal costing allows for information that is available in a timely manner to be useful in making important business decisions.

#### **b. Less Fluctuations in Costs from Period to Period**

As significant fluctuations can particularly exist in actual overhead incurred, the use of a predetermined overhead rate will smooth the effect of overhead costs over a period on the total costs of a product.

This will avoid some of the problems in pricing and performance evaluations that exist with actual costing.

### **D. STANDARD COSTING**

Standard costs are costs the firm had targeted to incur in a production process. They are the costs the firm expects it should incur during the process. The firm sets standard costs it hopes to attain using various techniques (covered in other chapters). In a standard costing system, standard costs are used for all manufacturing costs (i.e., raw materials, direct labor, and manufacturing overhead). For overhead, the standard application rate is multiplied by the standard quantity of the allocation base (not the actual quantity of the allocation base, as with normal costing).

### **1. Calculations**

#### **a. Direct Costs**

Standard price x Standard quantity = Standard direct costs

#### **b. Indirect (Overhead) Costs**

Standard (predetermined) rate x Standard quantity = Standard Indirect costs

### **2. Advantages of Standard Costing Systems**

#### **a. Cost control**

#### **b. Data for performance evaluations (via variance analysis from actual to standard)**

#### **c. Ability to learn from standards and improve various processes**

### **3. Determination of Tracking Method to Use**

When a standard cost measurement system is used, the firm must also decide which type of cost tracing system it will use, Sequential (as in traditional costing systems that track the flow of costs through traditional accounts) or back-flush (as in constant flow manufacturing).



## Inventory Costing Variable and Absorption Costing

### Absorption Costing (GAAP/TAX)

Inventoriable (*product*) costs:

- Direct material
- Direct manufacturing labor
- Variable Manufacturing overhead (indirect)
- Fixed Manufacturing overhead (indirect)

Period costs (*recorded as expenses when incurred*):

All nonmanufacturing costs in the value chain  
(*whether variable or fixed/direct or indirect*):

- Selling & Marketing (whether variable or fixed/direct or indirect).
- General & Administration cost
- Design, research and development.

### Variable/direct Costing (NOT GAAP)

Inventoriable (*product*) costs:

- Direct material
- Direct manufacturing labor
- Variable Manufacturing overhead (indirect)

Period costs (*recorded as expenses when incurred*):

All nonmanufacturing costs in the value chain  
(*whether variable or fixed/direct or indirect*):

- Selling & Marketing (whether variable or fixed/direct or indirect).
- General & Administration cost
- Design, research and development.

+

- Fixed Manufacturing overhead (indirect)

*Note: Selling, general, and administrative expenses are period costs under both methods.*

These two methods **differ only** in how they account for fixed manufacturing costs.

### Balance sheet (one condition):

Because fixed manufacturing overhead is included in inventory, finished goods inventory will be **higher** under absorption costing than when using variable costing where fixed manufacturing is expensed.

### Income statement:

How do changes in unit inventory levels affect operating income?

	Absorption Costing	Variable Costing
Production = sales	Equal	Equal
Production > sales	Higher	Lower
Production < sales	Lower	Higher

When comparing absorption costing with variable costing, the difference in operating income can be explained by the difference between the ending inventory in units and the beginning inventory in units, multiplied by the fixed manufacturing cost per unit.

Variable Costing (Internal) income figures that vary closely with sales and external income figures that are influenced by both units sold and productive output.



### Absorption Costing (GAAP/TAX)

#### (1) Absorption Costing-Benefits

- Absorption costing is GAAP (released to shareholders).
- The Internal Revenue Service requires the use of the absorption method for financial reporting.

#### (2) Absorption Costing-Limitations

- The level of inventory affects net income because fixed costs are a component of product cost.
- The net income reported under the absorption method is less reliable (especially for use in performance evaluations) than under the variable method because the cost of the product includes fixed costs and, therefore, the level of inventory affects net income.

Accountants who support absorption costing for external reporting maintain that inventories should carry a fixed-manufacturing-cost component. Why? Because both variable manufacturing costs and **fixed manufacturing costs are necessary to produce goods.**

### Variable (Direct) Costing (contribution approach)

#### (1) Variable Costing-Benefits

- Variable and fixed costs are separated and can be easily traced to and controlled by management.
- The net income reported under the contribution income statement is more reliable (especially for use in performance evaluations) than under the absorption method because the cost of the product does not include fixed costs and, therefore, the level of inventory does not affect net income.
- Variable costing isolates the contribution margins in financial statements to aid in decision making (the contribution margin is defined as sales price less all variable costs, including variable sales and administrative costs, and breakeven analysis CVP) is often based on contribution margins).

#### (2) Variable Costing-Limitations

- Variable costing is not GAAP.
- The Internal Revenue Service does not allow the use of the variable cost method for financial reporting.

Accountants who favor variable costing for external reporting maintain that the **fixed portion of manufacturing costs is more closely related to the capacity** to produce than to the actual production of specific units.

- **Indirect production costs** include items such as rent, utilities, maintenance, repair expenses, indirect materials, and indirect labor.
- For other indirect cost categories (including depreciation, insurance, taxes, officers' salaries, factory administrative expenses, and strike-related costs), the portion of the cost that is "incident to and necessary for production or manufacturing operations or processes" is inventoriable for tax purposes if (and only if) it is treated as inventoriable for the purposes of financial reporting. Accordingly, costs must often be allocated between those portions related to manufacturing activities and those not related to manufacturing.

### Throughput costing, which also is called super-variable costing (so far it has not been widely adopted)

Is an extreme form of variable costing in which only direct material costs are included as inventoriable costs.

All other costs are costs of the period in which they are incurred. In particular, variable direct manufacturing labor costs and variable manufacturing overhead costs are regarded as period costs and are deducted as expenses of the period.

### Throughput Margin

**Throughput margin equals revenues minus all direct material cost of goods sold**

Revenues - Direct material cost of goods sold = Throughput margin

**A Comparison of Alternative Inventory-Costing Methods**

Variable costing and absorption costing (as well as throughput costing) may be combined with actual, normal, or standard costing. Exhibit 9-6 compares product costing under six alternative inventory-costing systems.

<u>Variable Costing</u>	<u>Absorption Costing</u>
Actual costing	Actual costing
Standard costing	Standard costing
Normal costing	Normal costing

**Exhibit 9-6**

Comparison of Alternative Inventory-Costing Systems

		Actual Costing	Normal Costing	Standard Costing	
Absorption Costing	Variable Costing	Variable Direct Manufacturing Cost	Actual prices $\times$ Actual quantity of inputs used	Standard prices $\times$ Standard quantity of inputs allowed for actual output achieved	
		Variable Manufacturing Overhead Costs	Actual variable overhead rates $\times$ Actual quantity of cost-allocation bases used	Budgeted variable overhead rates $\times$ Actual quantity of cost-allocation bases used	Standard variable overhead rates $\times$ Standard quantity of cost-allocation bases allowed for actual output achieved
		Fixed Direct Manufacturing Costs	Actual prices $\times$ Actual quantity of inputs used	Actual prices $\times$ Actual quantity of inputs used	Standard prices $\times$ Standard quantity of inputs allowed for actual output achieved
		Fixed Manufacturing Overhead Costs	Actual fixed overhead rates $\times$ Actual quantity of cost-allocation bases used	Budgeted fixed overhead rates $\times$ Actual quantity of cost-allocation bases used	Standard fixed overhead rates $\times$ Standard quantity of cost-allocation bases allowed for actual output achieved

**Denominator-Level Capacity Concepts and Fixed-Cost Capacity Analysis**

We start by analyzing a key question in absorption costing: Given a level of spending on fixed manufacturing costs, what capacity level should be used to compute the fixed manufacturing cost per unit produced?

Capacity levels can be measured in terms of capacity supplied

- Theoretical capacity or
- Practical capacity.

Capacity can also be measured in terms of output demanded

- Normal capacity utilization or
- Master-budget capacity utilization.

The choice of the capacity level used to allocate budgeted fixed manufacturing costs to products can greatly affect the operating income reported under normal costing or standard costing and the product-cost information available to managers.



49. Last year a company had sales of 75,000 units and production of 100,000 units. Other information for the year is shown below.

Direct manufacturing labor	\$187,500
Variable manufacturing overhead	100,000
Direct materials	150,000
Variable selling expenses	100,000
Fixed administrative expenses	100,000
Fixed manufacturing overhead	200,000

Assuming no beginning inventory, what is the total value of ending finished goods inventory under absorption costing?

- a. \$159,375.
- b. \$184,375.
- c. \$209,375.
- d. \$279,175.

49. a

50. Using absorption costing, Langdon Company's income for October was \$250,000. Langdon began the month with 10,000 units in finished goods inventory that contained \$30,000 of fixed manufacturing overhead costs. During October, the company produced 330,000 units and sold 325,000 units. The fixed manufacturing overhead for October totaled \$990,000. If Langdon Company used variable costing, its income for October would be

- a. \$265,000.
- b. \$250,000.
- c. \$235,000.
- d. \$234,308.

50. c

16. Last year, a company had sales of 75,000 units and production of 100,000 units. Other information for the year is shown below.

Direct manufacturing labor	\$187,500
Variable manufacturing overhead	\$100,000
Direct materials	\$ 150,000
Variable selling expenses	\$100,000
Fixed administrative expenses	\$100,000
Fixed manufacturing overhead	\$ 200,000

Assuming no beginning inventory, what is the cost of goods sold under variable costing?

- a. \$553,125.
- b. \$478,125.
- c. \$403,125.
- d. \$328,125.

16. d





17. Almax Corporation produces and sells smart phones. The following information relates to Almax's operations for the last year.

Variable cost per unit	\$5.20
Total fixed manufacturing overhead cost	\$260,000
Total fixed selling and administrative cost	\$180,000
Units produced and sold	400,000

Using absorption costing, what was Almax's cost per unit last year?

- a. \$4.55.
- b. \$5.00.
- c. \$5.85.
- d. \$6.30.

17. c

7. The primary difference between absorption and variable costing is that variable costing treats

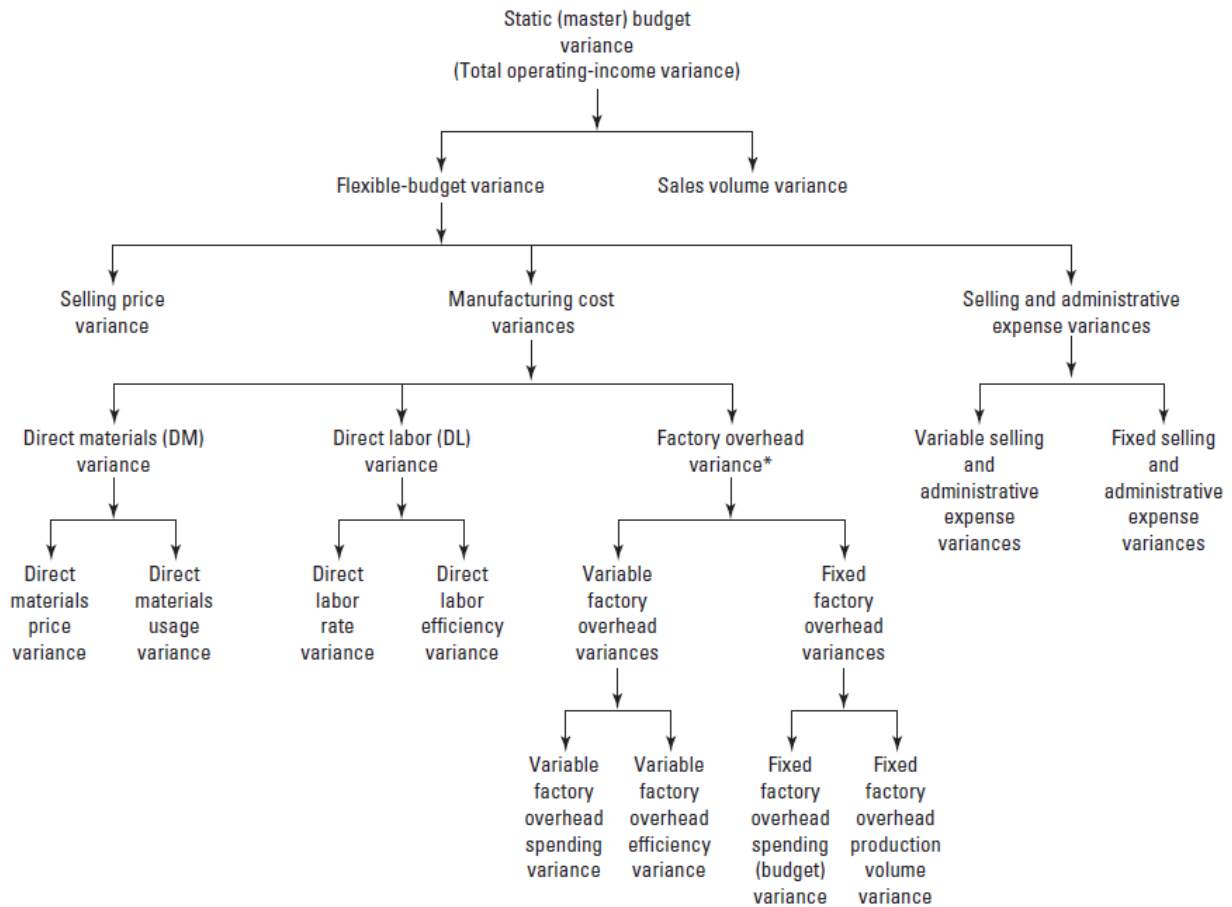
- a. only direct materials and direct labor as product cost.
- b. direct materials, direct labor, the variable portion of manufacturing overhead, and an allocated portion of fixed manufacturing overhead as product costs.
- c. only direct materials, direct labor, the variable portion of manufacturing overhead, and the variable portion of selling and administrative expenses as product cost.
- d. only direct materials, direct labor, and the variable portion of manufacturing overhead as product costs.

7. d

10. Isaac Toy Company management would like to determine profitability of its Alpha Doll product line. To eliminate the possibility of profit distortion due to changes in production, the managers should primarily review

- a. variable (direct) costing income statements.
- b. absorption costing income statements.
- c. multi-step income statements.
- d. cash flow statements.

10. a

**Operating-Income Variances (Single-Product Example)****Sales Volume Variance**

$$\text{Sales volume variance in terms of operating income} = \left( \text{Actual units sold} - \text{Units budgeted to be sold} \right) \times \text{Master budget contribution margin per unit}$$

27. Robinson Corporation's most recent performance report indicated:

	<u>Actual Results</u>	<u>Flexible Budget</u>	<u>Static Budget</u>
Revenues	\$5,000,000	\$4,600,000	\$5,200,000
Variable costs	2,600,000	2,300,000	2,600,000
Fixed costs	2,300,000	2,000,000	2,000,000
Operating income	\$ 100,000	\$ 300,000	\$ 600,000

Robinson's sales-volume variance for operating income is

- \$200,000U.
- \$300,000U.
- \$400,000F.
- \$500,000U.

27. b

**The sales volume variance may be a result of one or more of the following:**

1. The market for the product has changed. The total demand for the product grew (declined) at a rate higher than expected.
2. The firm lost market share to competitors.
3. The firm failed to set a proper goal for the period.
4. The firm set an inappropriate selling price for the product.
5. The marketing and promotion programs were not effective.

Each of these causes may be a result of one or more contributing factors. For example, a firm might have lost market share because of quality problems that led to customers' dissatisfaction, shifts in customer preferences and tastes, ineffective advertising, reduction in the number of sales calls or salespeople, or products not available due to production problems, among others. The proper response to a sales volume variance depends on the cause of the variance.

*For a multiproduct firm (not considered in this chapter), the sales volume variance can be decomposed into a pure volume variance and a sales-mix variance.*

**Flexible-Budget (FB) Variances**

$$\text{Total flexible-budget variance} = (\text{Actual}) \text{ operating income earned} - \text{Flexible-budget operating income}$$

**Breakdown of the Total Flexible-Budget Variance**

**Factors that contribute to the total flexible-budget variance include deviations in:**

- **selling prices,**
- **variable costs, and**
- **fixed costs from their standard or budgeted amounts.**

**Selling Price Variance**

$$\begin{aligned} \text{Selling price variance} &= \frac{\text{Actual sales revenue}}{\text{Flexible budget sales revenue}} \\ &= \left( \text{Units sold} \times \text{Actual selling price per unit} \right) - \left( \text{Units sold} \times \text{Budgeted selling price per unit} \right) \\ &= \left( \text{Actual selling price per unit} - \text{Budgeted selling price per unit} \right) \times \text{Units sold} \\ &= \text{Selling price variance} \end{aligned}$$

39. For the first week of the month the Flour Shop Bakery budgeted to sell 100 cakes at \$35 each. They actually sold 105 cakes at \$40 each. The selling-price variance is

- a. \$525 favorable.
- b. \$525 unfavorable.
- c. \$700 favorable.
- d. \$700 unfavorable.

39. a

**Variable Cost Flexible-Budget Variances**

$$\text{Total variable cost flexible-budget variance} = \text{Total variable cost incurred} - \text{Total flexible budget variable cost}$$

The total variable cost flexible-budget variance is the sum of flexible-budget variances of all variable costs and expenses, including flexible-budget variances for:

- direct materials,
- direct labor,
- variable overhead, and
- variable selling and administrative expenses.

**Direct Materials Flexible-Budget Variance**

The direct materials flexible-budget variance for each material is the difference between the **actual direct** materials cost and the total standard direct materials cost *for this period's output*.

1. Materials Price variance

$$\text{Materials price variance} = (AQ \times AP) - (AQ \times SP)$$

$$\text{Materials price variance} = AQ(AP - SP)$$

102. CSO: 1B1e LOS: 1B1k

Frisco Company recently purchased 108,000 units of raw material for \$583,200. Three units of raw materials are budgeted for use in each finished good manufactured, with the raw material standard set at \$16.50 for each completed product. Frisco manufactured 32,700 finished units during the period just ended and used 99,200 units of raw material. If management is concerned about the timely reporting of variances in an effort to improve cost control and bottom-line performance, the materials **purchase price variance** should be reported as

- \$6,050 unfavorable.
- \$9,920 favorable.
- \$10,800 unfavorable.
- \$10,800 favorable.

102. Correct answer d. Frisco's purchase price variance is \$10,800 F calculated as follows.

Price per unit purchased:  $\$583,200 \div 108,000 = \$5.40$

Standard price per unit:  $\$16.50 \div 3 = \$5.50$

Purchase price variance  $(\$5.50 - \$5.40) \times 108,000 = \$10,800 \text{ F}$

*A favorable direct materials price variance could lead to high manufacturing costs if the low-cost materials are of poor quality. Downstream costs such as scrap, rework, schedule disruptions, or field-service costs could exceed the price savings from lower materials prices.*

*A direct materials price variance (PV) can result from failure to take purchase discounts, unexpected price change of materials, changes in freight costs, variation in grades of materials, or other causes.*



2. Materials Quantity variance (Usage/Efficiency Variance)

$$\text{Materials quantity variance} = (AQ \times SP) - (SQ \times SP)$$

Actual quantity      Standard price      Standard quantity allowed for actual output

Again, the formula can be factored as follows:

$$\text{Materials quantity variance} = SP(AQ - SQ)$$

*A direct materials usage variance can result from the efforts of production personnel, substitutions of materials or production factors, variation in the quality of direct materials, inadequate training or inexperienced employees, poor supervision, or other factors.*

30. TwoCo established a standard direct material cost of \$20 per finished unit for its main product. The standard is calculated using direct materials of 4 pounds and a standard rate of \$5 per pound. For the month of March, TwoCo expected to produce 32,000 units. During the month, TwoCo purchased and used 130,000 pounds of material and produced 31,000 finished units. The actual price paid per pound was \$5.40. What was the material quantity variance for the month of March?

- a. \$10,000 unfavorable.
- b. \$20,000 unfavorable.
- c. \$30,000 unfavorable.
- d. \$32,400 favorable.

30. c

5. Bettis Company began business on January 1 of the current year. The firm's standard cost system allows for 4 yards of fabric at \$1.55 per yard for each finished unit of product. During the year, Bettis produced 20,000 units of finished product and sold 18,000 units. Although there was no work-in-process inventory at the end of the year, there were 2,100 yards of fabric included in the ending raw materials inventory. If the materials quantity variance was \$1,240 unfavorable, how many yards of fabric did Bettis buy during the year?

- a. 72,800 yards.
- b. 74,900 yards.
- c. 80,800 yards.
- d. 82,900 yards.

5. d

**Direct Labor Flexible-Budget Variance**

Direct labor flexible-budget variance is a result of the total direct labor cost of a period being different from the total standard direct labor cost for the output of the period.

**1.Direct Labor Rate Variance**

$$\text{Direct labor rate variance} = \left( \frac{\text{Actual hourly wage rate paid}}{\text{Standard hourly wage rate}} - 1 \right) \times \frac{\text{Total direct labor hours worked}}{\text{Standard hours}} \times \text{Standard rate}$$

$$RV = (AP - SP) \times AQ$$

*This could result from not using workers with the skill level specified in the standard cost sheet for the work performed or from using an out-of-date standard. The personnel department usually is responsible for direct labor rate variances. Production, however, could be responsible for the variance if it chooses to use employees with a different skill level than that specified in the standard cost sheet.*

33. Sleep-Fine Company is a mattress manufacturer. The company has a standard direct labor rate of \$25 per hour, 75 direct labor employees, and 50 indirect labor employees. Last week the direct labor payroll was \$90,000 for 3,000 hours worked. The company manufactured 1,000 mattresses. The standard cost sheet allows for 2.5 hours of labor per mattress. The direct labor rate variance was

- a. \$15,000 unfavorable.
- b. \$27,500 unfavorable.
- c. \$15,000 favorable.
- d. \$27,500 favorable.

33. a

**2.Direct Labor Efficiency Variance**

$$\text{Direct labor efficiency variance} = \left( \frac{\text{Total direct labor hours worked}}{\text{Total standard direct labor hours for the output of the period}} - 1 \right) \times \frac{\text{Standard direct labor hours}}{\text{Standard rate}}$$

$$EV = (AQ - SQ) \times SP$$

105. CSO: 1B1e LOS: 1B11

Lee Manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of May included the following information.

Direct labor (10,000 hours at \$15 per hour) \$150,000

Variable overhead 30,000

Fixed overhead 80,000

During May, 6,000 units were produced and the direct labor efficiency variance was \$1,500 unfavorable. Based on this information, the actual number of direct labor hours used in May was

- a. 9,900 hours.
- b. 10,100 hours.
- c. 11,900 hours.



d. 12,100 hours.

105. Correct answer d. The actual direct labor hours used by Lee Manufacturing is 12,100 calculated as follows.

$$\begin{array}{lcl} \text{Efficiency variance: (Actual quantity – Standard quantity) x Standard price} & & \\ \text{Standard quantity} & = & 6,000 \text{ units} \times 2 \text{ hours per unit} \\ & = & 12,000 \text{ hours} \\ \text{Actual hours:} & (X - 12,000) \times \$15 = & \$1,500 \\ & X - 12,000 = & 100 \\ & X = & \underline{12,100} \end{array}$$

This variance usually is the responsibility of the production department. Besides the employees' efficiency or inefficiency in carrying out their tasks, however, several other factors—including these—can lead to a direct-labor efficiency variance:

1. Employees or supervisors are new on the job or are inadequately trained.
2. Employees' skill levels are different from those specified in the standard cost sheet.
3. Batch sizes are different from the standard size.
4. Materials are different from those specified.
5. Machines or equipment are not in proper working condition.
6. Supervision is inadequate.
7. Scheduling is poor.

**Variance Analysis for Manufacturing Overhead Costs (We assume that the Company uses a standard cost system).**

$$\begin{aligned} \text{Total overhead variance} &= \text{Total actual overhead} - \text{Total applied overhead} \\ &= (\text{Total variable overhead} + \text{Total fixed overhead}) - (\text{Total overhead application rate} \times \\ &\quad \text{Standard hours allowed for this period's production}) \end{aligned}$$





Nina Garcia is the newly appointed president of Laser Products. She is examining the May 2012 results for the Aerospace Products Division. This division manufactures wing parts for satellites. Garcia's current concern is with manufacturing overhead costs at the Aerospace Products Division. Both variable and fixed overhead costs are allocated to the wing parts on the basis of laser-cutting-hours. The following budget information is available:

**Problem for Self-Study**

Budgeted variable overhead rate	\$200 per hour
Budgeted fixed overhead rate	\$240 per hour
Budgeted laser-cutting time per wing part	1.5 hours
Budgeted production and sales for May 2012	5,000 wing parts
Budgeted fixed overhead costs for May 2012	\$1,800,000

**Actual results for May 2012 are as follows:**

Wing parts produced and sold	4,800 units
Laser-cutting-hours used	8,400 hours
Variable overhead costs	\$1,478,400
Fixed overhead costs	\$1,832,200

**Developing Budgeted Overhead Rates**

**1. Select the Cost-Allocation Bases to Use in:**

**Allocating Variable Overhead Costs to Output Produced.** Assume operating managers select machine-hours as the cost-allocation base. Based on an engineering study, assume we estimate it will take 1.5 of a machine-hour per actual output unit. For its budgeted output of 5,000 wings, we budget 7,500 (1.5 x 5,000) machine-hours.

**1. Select the Cost-Allocation Bases to Use in:**

**Allocating Fixed Overhead Costs to Output Produced.** Assume operating managers select machine-hours as the cost-allocation base, the number of machine-hours is the denominator in the budgeted fixed overhead rate computation and is called the denominator level or, in manufacturing settings, the production-denominator level. We expect to operate at capacity 7,500 machine-hours.

**2. Identify the Variable Overhead Costs Associated with Each Cost-Allocation Base.**

Our company groups all of its variable overhead costs, including costs of energy, machine maintenance, engineering support, indirect materials, and indirect manufacturing labor in a single cost pool. Our total budgeted variable overhead costs are \$1,500,000.

**2. Identify the Fixed Overhead Costs Associated with Each Cost-Allocation Base.**

Costs in this pool include depreciation on plant and equipment, plant and equipment leasing costs, and the plant manager's salary. Fixed overhead budget is \$1,800,000.





**3. Compute the Rate per Unit of Each Cost-Allocation Base Used to Allocate Variable Overhead Costs to Output Produced.** Dividing the amount in Step 3 (\$1,500,000) by the amount in Step 1 (7,500 machine-hours), we estimate a rate of \$200 per standard machine-hour for allocating its variable overhead costs.

$$\begin{array}{ccccc} \text{Budgeted variable} & & \text{Budgeted input} & & \text{Budgeted variable} \\ \text{overhead cost rate} & = & \text{allowed per} & \times & \text{overhead cost rate} \\ \text{per output unit} & & \text{output unit} & & \text{per input unit} \end{array}$$

$$\begin{aligned} &= 1.5 \text{ hour per wing} \times \$200 \text{ per hour} \\ &= \$300 \text{ per wing part} \end{aligned}$$

**3. Compute the Rate per Unit of Each Cost-Allocation Base Used to Allocate Fixed Overhead Costs to Output Produced.**

Dividing the \$1,800,000 from Step 2 by the 7,500 machine-hours from Step 1, we estimate a fixed overhead cost rate of \$240 per machine-hour:

$$\begin{array}{ccc} \text{Budgeted fixed} & & \text{Budgeted total costs} \\ \text{overhead cost per} & = & \text{in fixed overhead cost pool} \\ \text{unit of cost-allocation} & & \text{Budgeted total quantity of} \\ \text{base} & & \text{cost-allocation base} \end{array}$$

We can now calculate the budgeted fixed overhead cost per output unit as follows:

$$\begin{array}{ccccc} \text{Budgeted fixed} & & \text{Budgeted quantity of} & & \text{Budgeted fixed} \\ \text{overhead cost per} & = & \text{cost-allocation} & \times & \text{overhead cost} \\ \text{output unit} & & \text{base allowed per} & & \text{per unit of} \\ & & \text{output unit} & & \text{cost-allocation base} \end{array}$$

$$\begin{aligned} &= 1.5 \text{ of a machine-hour per wing} \times \$240 \text{ per machine-hour} \\ &= \$360 \text{ per wing part} \end{aligned}$$

**1. Compute the Total overhead variance:**

$$\begin{aligned}\text{Total overhead variance} &= \text{Total actual overhead} - \text{Total applied overhead} \\ &= (\text{Total variable overhead} + \text{Total fixed overhead}) - (\text{Total overhead application rate} \times \\ &\quad \text{Standard hours allowed for this period's production})\end{aligned}$$

- **Total actual overhead** = Actual Variable overhead costs + Actual Fixed overhead costs

Total actual overhead =

- **Total applied overhead** = Applied Variable overhead costs + Applied Fixed overhead costs

Total applied overhead =

**Applied Variable overhead costs =**

Budgeted Input Quantity Allowed for Actual Output	<b>X</b>	Variable Budgeted Rate
Standard hours allowed for this period's production	<b>X</b>	Variable application rate

**Applied Fixed overhead costs =**

Budgeted Input Quantity Allowed for Actual Output	<b>X</b>	Fixed Budgeted Rate
Standard hours allowed for this period's production	<b>X</b>	Fixed application rate

*Note, too, that this total variance, from a product-costing standpoint, could be called total over/underapplied overhead cost for the period.*

**Cost Control: Breakdown of the Total Variable Overhead Variance**

The total variable overhead variance for a period (\$.....in our example) can be broken down into:

- a variable overhead spending variance and
- a variable overhead efficiency variance, as follows:

**Variable overhead spending variance**

$$\begin{aligned}\text{Variable overhead spending variance} &= \text{Actual variable overhead} - \text{Budgeted variable overhead} \\ &\quad \text{based on inputs (e.g., actual labor hours worked)} \\ &= (AQ \times AP) - (AQ \times SP) \\ &= AQ \times (AP - SP)\end{aligned}$$

$$\text{Variable overhead spending variance} = \left( \begin{array}{cc} \text{Actual variable} & \text{Budgeted variable} \\ \text{overhead cost per unit} & \text{overhead cost per unit} \\ \text{of cost-allocation base} & \text{of cost-allocation base} \end{array} \right) \times \begin{array}{l} \text{Actual quantity of} \\ \text{variable overhead} \\ \text{cost-allocation base} \\ \text{used for actual output} \end{array}$$

**Variable overhead efficiency variance**

$$\begin{aligned}\text{Variable overhead efficiency variance} &= \text{Budgeted variable overhead based on inputs} - \text{Standard variable overhead applied to production} \\ &= (AQ \times SP) - (SQ \times SP) \\ &= SP \times (AQ - SQ)\end{aligned}$$

$$\text{Variable overhead efficiency variance} = \left( \begin{array}{c} \text{Actual quantity of} \\ \text{variable overhead} \\ \text{cost-allocation base} \\ \text{used for actual} \\ \text{output} \end{array} - \begin{array}{c} \text{Budgeted quantity of} \\ \text{variable overhead} \\ \text{cost-allocation base} \\ \text{allowed for} \\ \text{actual output} \end{array} \right) \times \begin{array}{c} \text{Budgeted variable} \\ \text{overhead cost per unit} \\ \text{of cost-allocation base} \end{array}$$

**Total fixed overhead variance**

The total fixed overhead variance is the difference between the actual fixed overhead cost incurred and the fixed overhead cost applied to production based on a standard fixed overhead application rate; also called over or underapplied fixed overhead for the period.

The total fixed overhead variance for a period (\$.....in our example) can be broken down into:

- o The Production-Volume (Denominator) Variance and
- o Fixed Overhead Spending (Budget) Variance, as follows:

$$\text{Total fixed overhead variance} = \text{Spending variance} + \text{Production-volume variance}$$

**The Production-Volume (Denominator) Variance (noncontrollable overhead variance)**

As noted earlier for GAAP purposes, companies must report inventories on a full (**absorption**) cost basis. This means that each unit produced must absorb a share of fixed factory overhead costs in addition to variable manufacturing costs. In turn, this requires that fixed overhead costs be “unitized” for product-costing purposes. This variance is an artifact of **unitizing** fixed overhead costs for product-costing purposes. PVV reflects differences between available capacity and actual capacity usage. In short, the reporting of production volume variances over time provides decision makers with information that can be used to manage spending on capacity-related resources.

$$\text{Production volume variance} = \text{Budgeted fixed overhead} - \text{Fixed overhead allocated for actual output units produced}$$

$$\text{Production-volume variance} = \text{Budgeted fixed factory overhead cost} - \text{Standard fixed overhead cost assigned to production}$$

$$= SP \times (\text{Denominator activity hours} - SQ)$$

In summary, for product-costing purposes a company must choose an activity level over which it spreads budgeted fixed manufacturing costs for a given period. If the company actually operates at the level assumed when the application rate was determined, it will have assigned to production an amount exactly equal to the budgeted fixed overhead for the period.



If, on the other hand, the company operates at any level of activity other than the denominator activity level, then it will have applied to production an amount greater or lesser than budgeted fixed overhead. It is this over-or underapplied budgeted fixed overhead that we call the **production-volume variance** for the period.

### **Fixed Overhead Spending (Budget) Variance**

is the difference between budgeted and actual fixed factory overhead costs for a period.

*Unfavorable fixed overhead spending variances can also result from excessive spending due to improper or inadequate cost controls. Events such as emergency repairs, impromptu replacement of equipment, or the addition of production supervisors for an unscheduled second shift all would result in unfavorable fixed overhead spending variances for the period.*

Fixed overhead spending variance = Actual fixed overhead – Budgeted fixed overhead

**Choose a denominator activity level**

Choose a denominator activity level In order to unitize fixed overhead costs for product-costing purposes, we must choose some level of output (activity) over which the budgeted fixed costs for the period can be spread.

The general term used to describe the level of output (activity) used to establish the standard fixed overhead application rate is denominator activity level or denominator volume. Several alternatives exist for defining the denominator activity level:

two “supply-based” alternatives:

- **theoretical capacity** (the maximum level of activity or output based on available capacity)
- **practical capacity** (theoretical capacity reduced by normal employee breaks, machine downtime for maintenance, and other “expected” loss of output).

and two “demand-based” alternatives:

- **budgeted (master) capacity** utilization (the expected level of activity or output for the upcoming period, usually a year), or
- **normal capacity** (the average level of demand for the company’s product projected over an intermediate-level number of years into the future, say, three to five years).

**Theoretical capacity > Practical capacity > Budgeted (master) & normal capacity**

The larger the denominator in the overhead application rate, the smaller the rate and the lower the cost assigned to the product.

Theoretical capacity, which is the absolute capacity during continuous operations, ignoring holidays, maintenance time, etc., provides the largest denominator in the ratio.

Nash Glassworks Company has budgeted fixed manufacturing overhead of \$100,000 per month. The company uses absorption costing for both external and internal financial reporting purposes. Budgeted overhead rates for cost allocations for the month of April using alternative unit output denominator levels are shown in the next column.

<u>Capacity Levels</u>	<u>Budgeted Denominator Level (units of output)</u>	<u>Budgeted Overhead Cost Rate</u>
Theoretical	1,500,000	\$.0667
Practical	1,250,000	.0800
Normal	775,000	.1290
Master-budget	800,000	.1250

Actual output for the month of April was 800,000 units of glassware.



[353] Gleim #: 3.5.103 -- Source: CMA 696 3-2

The choice of a production volume level as a denominator in the computation of fixed overhead rates can significantly affect reported net income. Which one of the following statements is true for Nash Glassworks Company if its beginning inventory is zero, production exceeded sales, and variances are adjustments to cost of goods sold? The choice of

- A. Practical capacity as the denominator level will result in a lower net income amount than if master-budget capacity is chosen.
- B. Normal capacity as the denominator level will result in a lower net income amount than if any other capacity volume is chosen.
- C. Master-budget capacity as the denominator level will result in a lower net income amount than if theoretical capacity is chosen.
- D. Practical capacity as the denominator level will result in a higher net income amount than if normal capacity is chosen.

Answer (A) is correct. The choice of practical rather than master budget capacity as the denominator level will result in a lower absorption costing net income. Practical capacity is the maximum level at which output is produced efficiently, with an allowance for unavoidable interruptions, for example, for holidays and scheduled maintenance. Because this level will be higher than master-budget (expected) capacity, its use will usually result in the underapplication of fixed overhead. For example, given costs of \$100,000 and master-budget capacity of 800,000 units, \$.125 per unit is the application rate. If practical capacity is 1,250,000 units, the application rate is \$.08 per unit. If actual production is 800,000 units, fixed overhead will not be over- or underapplied given the use of master-budget capacity. However, there will be \$36,000 (450,000 units  $\times$  \$.08) of underapplied fixed overhead if practical capacity is the denominator level. Consequently, given that the beginning inventory is zero and that production exceeded sales, less fixed overhead will be inventoried at the lower practical capacity rate than at the master-budget rate. Thus, master-budget net income will be greater.

Which activity level should be chosen when determining the fixed overhead application rate?

*The answer is partly subjective.*

This is due largely to the fact that the resulting **product-cost information** can be used for different purposes, ranging from **product-pricing decisions**, to **performance-evaluation purposes**, to **tax and external reporting requirements in accounting**.

*Generally Accepted Accounting Principles (GAAP) require that allocation of fixed production overhead to products be based on the **normal** capacity of the production facilities.*

**Note that different definitions of the denominator volume will result in:**

- different fixed overhead application rates,
- different amounts of fixed overhead costs charged to production, and therefore
- different amounts for the production-volume variance.





Depending on how variances are disposed of at the end of the year, the financial statements can be affected by the choice of denominator activity level.

Our position is that for internal reporting purposes **practical capacity** be used as the denominator level for setting the fixed overhead allocation rate.

- Practical capacity is consistent with current Federal income tax requirements.
- Practical capacity volume provides more uniform data over time, which facilitates decision making on the part of management.
- Practical capacity in the denominator is logically consistent with the numerator in the fixed overhead rate calculation. That is, the numerator represents the costs of the capacity supplied and the denominator represents, in practical terms, the amount of capacity supplied.
- Practical capacity means that current customers and current production will not be burdened with the cost of unused capacity, which would be the case if budgeted output were used and budgeted output is less than practical capacity.
- The cost of unused capacity becomes visible to management through the amount and direction of the production-volume variance.



### Variable Overhead Spending Variance

26. Huffman Corporation's budget indicated that it should produce 50,000 units of finished goods, while incurring 20,000 hours of direct labor and \$150,000 of variable manufacturing overhead. Huffman actually produced 52,000 finished goods units using 22,000 hours of direct labor and incurring \$160,000 of variable manufacturing overhead. If Huffman uses a standard cost system and applies variable manufacturing overhead based upon direct labor hours, its **variable overhead spending** variance was

- a. \$4,000 unfavorable.
- b. \$5,000 favorable.
- c. \$9,000 unfavorable.
- d. \$10,000 unfavorable.

26. b

45. International Corporation uses a standard costing system and allocates variable overhead costs based on direct labor hours. The annual budget projected 1,000 finished units, 10,000 hours of direct labor and \$100,000 of variable overhead costs. At the end of the year 750 units were completed using 8,000 hours of direct labor and \$75,000 in variable overhead. What is the variable overhead spending variance?

- a. \$0.
- b. \$5,000 favorable.
- c. \$5,000 unfavorable.
- d. \$25,000 favorable.

45. b

42. Sugar Plums Inc. manufactures dresses for children. The variable overhead costs are allocated on the basis of budgeted direct labor hours. According to the December budget, each dress takes four direct labor hours to produce. Budgeted variable manufacturing overhead cost per labor hour is \$12 and the budgeted number of dresses to be made is 1,040. Actual variable manufacturing costs in December were \$52,164 for 1,080 dresses produced. Actual direct labor hours were 4,536 hours. The variable overhead spending variance is

- a. \$2,592 favorable.
- b. \$2,592 unfavorable.
- c. \$2,268 favorable.
- d. \$2,268 unfavorable.

42. c



### Production Volume Variance

28. Last year Elegis Skin Care Inc. budgeted \$600,000 of fixed overhead for its plant that manufactures moisturizing cream. The \$600,000 was based on a denominator activity level of 40,000 machine hours. There is 0.1 standard machine hours for each bottle of moisturizing cream. 350,000 bottles of moisturizing cream were produced, and 360,000 bottles were sold last year. What was the production volume variance?

- a. \$60,000 unfavorable.
- b. \$75,000 unfavorable.
- c. \$60,000 favorable.
- d. \$75,000 favorable.

28. b

31. A company using a standard cost system established a standard fixed cost per finished unit of \$4.00, and forecasted production and sales of 300,000 units. For the year, the company experienced an unfavorable production volume variance of \$14,000. Which one of the following would be the cause of this variance?

- a. The number of units produced was more than 300,000.
- b. The number of units produced was less than 300,000.
- c. The number of units sold was more than 300,000.
- d. The number of units sold was less than 300,000.

31. b

**[1] Gleim #: 7.1.1 -- Source: CMA 1296 3-23**

The purpose of identifying manufacturing variances and assigning their responsibility to a person/department should be to

- A. Use the knowledge about the variances to promote learning and continuous improvement in the manufacturing operations.
  - B. Trace the variances to finished goods so that the inventory can be properly valued at year-end.
  - C. Determine the proper cost of the products produced so that selling prices can be adjusted accordingly.
  - D. Pinpoint fault for operating problems in the organization.
- Answer (A) is **correct**. The purpose of identifying and assigning responsibility for variances is to determine who is likely to have information that will enable management to find solutions. The constructive approach is to promote learning and continuous improvement in manufacturing operations, not to assign blame. However, information about variances may be useful in evaluating managers' performance.
  - Answer (B) is **incorrect**. Depending on a cost-benefit determination, variances either are adjustments of cost of goods sold or are allocated among the inventory accounts and cost of goods sold. Moreover, the accounting issues are distinct from supervisory considerations.
  - Answer (C) is **incorrect**. Selling prices are based on much more than the cost of production; for instance, competitive pressure is also a consideration.
  - Answer (D) is **incorrect**. By itself, pinpointing fault is not an appropriate objective. Continuous improvement is the ultimate objective.

**[2] Gleim #: 7.1.2 -- Source: CMA 683 4-5**

A difference between standard costs used for cost control and the budgeted costs of the same manufacturing effort can exist because

- A. Standard costs represent what costs should be, whereas budgeted costs are expected actual costs.
- B. Budgeted costs are historical costs, whereas standard costs are based on engineering studies.
- C. Budgeted costs include some slack, whereas standard costs do not.
- D. Standard costs include some slack, whereas budgeted costs do not.

- Answer (A) is **correct**. In the long run, these costs should be the same. In the short run, however, they may differ because standard costs represent what costs should be, whereas budgeted costs are expected actual costs. Budgeted costs may vary widely from standard costs in certain months, but, for an annual budget period, the amounts should be similar.
- Answer (B) is **incorrect**. Standard costs are not necessarily determined by engineering studies.
- Answer (C) is **incorrect**. Standard costs are usually based on currently attainable standards applicable when a process is under control. They are set without regard to variances or slack.
- Answer (D) is **incorrect**. Budgeted costs include expected deviations from the standards.

**[3] Gleim #: 7.1.3 -- Source: Publisher**

In a responsibility accounting system, a feedback report that focuses on the difference between budgeted amounts and actual amounts is an example of

- A. Management by exception.
  - B. Assessing blame.
  - C. Granting rewards to successful managers.
  - D. Ignoring other variables for which the budgeted goals were met.
- Answer (A) is **correct**. A responsibility accounting system should have certain controls that provide for feedback reports indicating deviations from expectations. Management may then focus on those deviations (exceptions) for either reinforcement or correction.
  - Answer (B) is **incorrect**. The responsibility accounting system should not be used exclusively to assess blame.
  - Answer (C) is **incorrect**. The responsibility accounting system should not be used exclusively to give rewards.
  - Answer (D) is **incorrect**. Feedback reports concentrate on deviations, but not to the total exclusion of other budgeted variables.

[6] Gleim #: 7.1.6 -- Source: CMA 0408 2-230

Use of a standard cost system can include all of the following advantages **except** that it

- A. Assists in performance evaluation.
  - B. Emphasizes qualitative characteristics.
  - C. Permits development of flexible budgeting.
  - D. Allows employees to better understand what is expected of them.
- Answer (A) is **incorrect**. Standard costing assists in performance evaluation.
  - Answer (B) is **correct**. A standard cost system is fully focused on quantitative factors, not qualitative characteristics.
  - Answer (C) is **incorrect**. Standard cost permits the development of flexible budgeting.
  - Answer (D) is **incorrect**. Standard costing allows employees to better understand what is expected of them.

[1] Gleim #: 7.2.7 -- Source: CMA 1295 3-6

The difference between the actual amounts and the flexible budget amounts for the actual output achieved is the

- A. Production volume variance.
- B. Flexible budget variance.
- C. Sales volume variance.
- D. Standard cost variance.

- Answer (A) is **incorrect**. The production volume variance equals under- or overapplied fixed overhead.
- Answer (B) is **correct**. A flexible budget is prepared at the end of the budget period when the actual results are available. A flexible budget reflects the revenues that should have been earned and costs that should have been incurred given the achieved levels of production and sales. The difference between the flexible budget and actual figures is known as the flexible budget variance.
- Answer (C) is **incorrect**. The sales volume variance is the difference between the flexible budget amount and the static budget amount.
- Answer (D) is **incorrect**. A standard cost variance is not necessarily based on a flexible budget.

[2] Gleim #: 7.2.8 -- Source: CMA 1293 3-25

A manufacturing firm planned to manufacture and sell 100,000 units of product during the year at a variable cost per unit of \$4.00 and a fixed cost per unit of \$2.00. The firm fell short of its goal and only manufactured 80,000 units at a total incurred cost of \$515,000. The firm's manufacturing cost variance was

- A. \$85,000 favorable.
- B. \$35,000 unfavorable.
- C. \$5,000 favorable.
- D. \$5,000 unfavorable.

- Answer (A) is **incorrect**. The amount of \$85,000 favorable is based on a production level of 100,000 units.
- Answer (B) is **incorrect**. The variance is favorable.

- Answer (C) is **correct**. The company planned to produce 100,000 units at \$6 each (\$4 variable + \$2 fixed cost), or a total of \$600,000, consisting of \$400,000 of variable costs and \$200,000 of fixed costs. Total production was only 80,000 units at a total cost of \$515,000. The flexible budget for a production level of 80,000 units includes variable costs of \$320,000 (80,000 units × \$4). Fixed costs would remain at \$200,000. Thus, the total flexible budget costs are \$520,000. Given that actual costs were only \$515,000, the variance is \$5,000 favorable.
- Answer (D) is **incorrect**. The variance is favorable.

**[3] Gleim #: 7.2.9 -- Source: CMA 1295 3-24**

Based on past experience, a company has developed the following budget formula for estimating its shipping expenses. The company's shipments average 12 lbs. per shipment:

Shipping costs = \$16,000 + (\$0.50 × lbs. shipped)

The planned activity and actual activity regarding orders and shipments for the current month are given in the following schedule:

	Plan	Actual
Sales orders	800	780
Shipments	800	820
Units shipped	8,000	9,000
Sales	\$120,000	\$144,000
Total pounds shipped	9,600	12,300

The actual shipping costs for the month amounted to \$21,000. The appropriate monthly flexible budget allowance for shipping costs for the purpose of performance evaluation would be

- A. \$20,680
- B. \$20,920
- C. \$20,800
- D. \$22,150

- Answer (A) is **incorrect**. The amount of \$20,680 is based on the actual number of sales orders, rather than on pounds shipped.
- Answer (B) is **incorrect**. The amount of \$20,920 is based on the number of shipments, not the number of pounds shipped.
- Answer (C) is **incorrect**. The amount of \$20,800 is based on planned pounds shipped of 9,600, not actual pounds shipped of 12,300.



- Answer (D) is **correct**. The flexible budget formula is

Shipping costs = \$16,000 + (\$.50 × lbs. shipped)

Therefore, to determine the flexible budget amount, multiply the actual pounds shipped (12,300) times the standard cost (\$.50) to arrive at a total expected variable cost of \$6,150. Adding the variable cost to \$16,000 of fixed cost produces a budget total of \$22,150.

**[7] Gleim #: 7.2.13 -- Source: CMA 0408 2-222**

An advantage of using a flexible budget compared to a static budget is that, in a flexible budget,

- A. Shortfalls in planned production are clearly presented.
- B. Standards can easily be changed to adjust to changing circumstances.
- C. Fixed cost variances are more clearly presented.
- D. Budgeted costs for a given output level can be compared with actual costs for the same level of output.

- Answer (A) is **incorrect**. Shortfalls in planned production should be clearly presented by any budget system.
- Answer (B) is **incorrect**. Easily changed standards defeat the purpose of having standards.
- Answer (C) is **incorrect**. Fixed cost variances are no more clearly presented under a flexible budgeting system than they are under any other.
- Answer (D) is **correct**. The actual level of production for a period is rarely identical to the level that was projected when the period was being planned. Flexible budgets use standard costs to report what costs “should” have been incurred given the actual level of production achieved.

**[8] Gleim #: 7.2.14 -- Source: CMA 0408 2-223**

A major disadvantage of a static budget is that

- A. It is more difficult to develop than a flexible budget.
  - B. It is made for only one level of activity.
  - C. Variances tend to be smaller than when flexible budgeting is used.
  - D. Variances are more difficult to compute than when flexible budgeting is used.
- Answer (A) is **incorrect**. A static budget is easier to prepare than a flexible budget.

- Answer (B) is **correct**. Static budgets are prepared based on the best estimates for output to be produced and costs to be incurred before the period begins. If there are any variations in conditions actually experienced, the static budget is unhelpful for diagnosing specific problem areas since it only reflects one level of activity.
- Answer (C) is **incorrect**. The size of the variances encountered is not a function of the budgeting system used.
- Answer (D) is **incorrect**. Variances are no harder to compute under static budgeting than under flexible budgeting.

**[9] Gleim #: 7.2.15 -- Source: CMA 0408 2-224**

Arkin Co.'s controller has prepared a flexible budget for the year just ended, adjusting the original static budget for the unexpected large increase in the volume of sales. Arkin's costs are mostly variable. The controller is pleased to note that both actual revenues and actual costs approximated amounts shown on the flexible budget. If actual revenues and actual costs are compared with amounts shown on the original (static) budget, what variances would arise?

- A. Both revenue variances and cost variances would be favorable.
  - B. Revenue variances would be favorable and cost variances would be unfavorable.
  - C. Revenue variances would be unfavorable and cost variances would be favorable.
  - D. Both revenue variances and cost variances would be unfavorable.
- Answer (A) is **incorrect**. Only one of the variances would be favorable.
  - Answer (B) is **correct**. Since Arkin's actual sales volume exceeded expectations, revenue variances will be favorable. By the same token, the higher level of output resulted in the company incurring more production costs than expected.
  - Answer (C) is **incorrect**. Revenue variances would be favorable and cost variances would be unfavorable.
  - Answer (D) is **incorrect**. Only one of the variances would be unfavorable.

**[10] Gleim #: 7.2.16 -- Source: CMA 0408 2-225**

Which one of the following statements is correct concerning a flexible budget cost formula? Variable costs are stated

- A. Per unit and fixed costs are stated in total.
- B. In total and fixed costs are stated per unit.
- C. In total and fixed costs are stated in total.
- D. Per unit and fixed costs are stated per unit.

- Answer (A) is **correct**. Variable costs by their nature are directly related to the level of activity. Thus, a flexible budget formula must use per-unit variable costs to be useful. At the same time, all fixed costs must be covered regardless of the level of output. They are most meaningful when stated in total.
- Answer (B) is **incorrect**. A flexible budget formula would use variable costs per unit.
- Answer (C) is **incorrect**. A flexible budget formula would use variable costs per unit.
- Answer (D) is **incorrect**. A flexible budget formula would use fixed costs in total.

**[11] Gleim #: 7.2.17 -- Source: CMA 0408 2-226**

The monthly sales volume of Shugart Corporation varies from 7,000 units to 9,800 units over the course of a year. Management is currently studying anticipated selling expenses along with the related cash resources that will be needed. Which of the following types of budgets (1) should be used by Shugart in planning and (2) will provide Shugart the best feedback in performance reports for comparing planned expenditures with actual amounts?

	<u>Planning</u>	<u>Performance Reporting</u>
A.	Static	Static
B.	Static	Flexible
C.	Flexible	Static
D.	Flexible	Flexible

- Answer (A) is **incorrect**. Flexible budgets should be used for both planning and performance reporting.
- Answer (B) is **incorrect**. A flexible budget should also be used for planning.
- Answer (C) is **incorrect**. A flexible budget should also be used for performance reporting.

- Answer (D) is **correct**. A flexible budget is always more useful than a static budget. A static budget is only helpful when exactly the combination of circumstances on which it is based are actually experienced. Using a flexible budget in the planning stages will allow Shugart to project the results of multiple combinations of factors, and using one in measuring performance will allow the company to most accurately identify areas of success and failure.

**[12] Gleim #: 7.2.18 -- Source: CMA 0408 2-229**

The benefits of management by exception reporting include all of the following **except** a reduction in

- A. Reports/production costs.
- B. Information overload.
- C. Reliance on advance planning.
- D. Unfocused management actions.

- Answer (A) is **incorrect**. Management by exception will tend to produce fewer reports.
- Answer (B) is **incorrect**. Management by exception may tend to decrease information overload since managers will have fewer reports to study.
- Answer (C) is **correct**. Management by exception, the practice of giving attention primarily to significant deviations from expectations, is dependent upon careful formulation of standards and sound projection of output and cost levels. Advance planning will be just as important as ever. There will be no less reliance than in the past.
- Answer (D) is **incorrect**. Management actions will be more focused since they will be able to target only a few areas for analysis instead of everything.

**[13] Gleim #: 7.2.19 -- Source: CMA 0408 2-231**

Teeny Toddlers is a 4-year old manufacturer of colorful, plastic toddler riding toys. To maintain competitive prices, control of costs is critical. Management has considered moving production overseas, but so far they are committed to remaining in the U.S. Management has decided to permit their employees to participate in setting up a new standard cost system. Management likely expects the new standard cost system, along with the employee input, to provide all of the following benefits **except** that

- A. Unfavorable variances are more likely to occur.
- B. Employees who participate in setting standards may be more efficient.
- C. Standard costs will help management in uncovering potential cost problems.
- D. Standard costing permits management by exception, which should save some time.

- Answer (A) is **correct**. A well-designed standard cost system should produce fewer unfavorable variances.
- Answer (B) is **incorrect**. Employees who participate in setting standards may be more efficient.
- Answer (C) is **incorrect**. Standard costs will help management in uncovering potential cost problems.
- Answer (D) is **incorrect**. Standard costing permits management by exception, which should save some time.

**[14] Gleim #: 7.2.20 -- Source: CMA 0408 2-232**

Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?

- A. Set standards with the help of line personnel directly involved in the process.
  - B. Do not differentiate between variable and fixed overhead in calculating overhead variances.
  - C. Use standard costs only for inventory valuation.
  - D. Use the prior year's average actual cost as the current year's standard.
- 
- Answer (A) is **correct**. Standard costs should be set with input from the personnel who are most familiar with input usage.
  - Answer (B) is **incorrect**. A failure to distinguish between variable and fixed cost variances will inevitably lead to poor decision-making.
  - Answer (C) is **incorrect**. Standard costs should be used for all inputs to the production process and should be used for control purposes as well as inventory valuation.
  - Answer (D) is **incorrect**. Simply using an average amount based on previous experience defeats the purpose of standard costing, which should be based on best estimates and established as scientifically as is economical.

[1] Gleim #: 7.3.21 -- Source: CMA 694 3-21

Under a standard cost system, the materials efficiency variances are the responsibility of

- A. Production and industrial engineering.
- B. Purchasing and industrial engineering.
- C. Purchasing and sales.
- D. Sales and industrial engineering.

- Answer (A) is **correct**. The materials efficiency variance is the difference between actual and standard quantities used in production, times the standard price. An unfavorable materials efficiency variance is usually caused by wastage, shrinkage, or theft. Thus, it may be the responsibility of the production department because excess usage would occur while the materials are in that department. In addition, industrial engineering may play a role because it is responsible for design of the production process.
- Answer (B) is **incorrect**. Purchasing rarely can control the materials efficiency variance.
- Answer (C) is **incorrect**. Sales has no effect on the materials efficiency variance.
- Answer (D) is **incorrect**. Sales has no effect on the materials efficiency variance.

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[Fact Pattern #1]

Blaster, Inc., a manufacturer of portable radios, purchases the components from subcontractors to use to assemble into a complete radio. Each radio requires three units each of Part XBEZ52, which has a standard cost of \$1.45 per unit. During May, Blaster experienced the following with respect to Part XBEZ52.

	<u>Units</u>
Purchases (\$18,000)	12,000
Consumed in manufacturing	10,000
Radios manufactured	3,000

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[2] Gleim #: 7.3.22 -- Source: CMA 695 3-23

(Refers to Fact Pattern #1)

During May, Blaster incurred a purchase price variance of

- A. \$450 unfavorable.
- B. \$450 favorable.
- C. \$500 favorable.
- D. \$600 unfavorable.

- Answer (A) is **incorrect**. The standard quantity needed for the actual output times the \$.05 unfavorable price variance per part equals \$450 unfavorable.
- Answer (B) is **incorrect**. The variance is unfavorable, and \$450 is the amount of the variance that relates only to the standard input for the actual output.
- Answer (C) is **incorrect**. The variance is unfavorable. Furthermore, the variance is based on the quantity purchased, not the quantity consumed. [Note: The materials price variance is sometimes isolated at the time of transfer to production.]
- Answer (D) is **correct**. Blaster's purchase price variance is calculated as follows:

$$\begin{aligned}\text{Purchase price variance} &= \text{AQ} \times (\text{SP} - \text{AP}) \\ &= 12,000 \text{ parts} \times (\$1.45 - \$1.50) \\ &= 12,000 \times -\$0.05 \\ &= \$600 \text{ unfavorable}\end{aligned}$$

[3] Gleim #: 7.3.23 -- Source: CMA 695 3-24

(Refers to Fact Pattern #1)

During May, Blaster incurred a materials efficiency variance of

- A. \$1,450 unfavorable.
- B. \$1,450 favorable.
- C. \$4,350 unfavorable.
- D. \$4,350 favorable.

- Answer (A) is **correct**. Standard usage was three parts per radio at \$1.45 each. For a production level of 3,000 units, the total materials needed equaled 9,000 parts, but materials actually used totaled 10,000 parts. Thus, the variance is \$1,450 unfavorable  $\{ \text{SP} \times (\text{AQ} - \text{SQ}) = [\$1.45 \text{ standard cost per part} \times (10,000 \text{ actually used} - 9,000 \text{ standard usage})] \}$ .

- Answer (B) is **incorrect**. The variance is unfavorable. The actual quantity used exceeded the standard input allowed.
- Answer (C) is **incorrect**. Assuming that 12,000 parts were consumed results in \$4,350 unfavorable.
- Answer (D) is **incorrect**. Assuming that 12,000 parts were consumed and that the variance is favorable results in \$4,350 favorable.

**[4] Gleim #: 7.3.24 -- Source: CMA Sample Q3-11**

Garland Company uses a standard cost system. The standard for each finished unit of product allows for 3 pounds of plastic at \$0.72 per pound. During December, Garland bought 4,500 pounds of plastic at \$0.75 per pound, and used 4,100 pounds in the production of 1,300 finished units of product. What is the materials purchase price variance for the month of December?

- A. \$117 unfavorable.
- B. \$123 unfavorable.
- C. \$135 unfavorable.
- D. \$150 unfavorable.

- Answer (A) is **incorrect**. The variance of \$117 unfavorable is based on the standard input for 1,300 units.
- Answer (B) is **incorrect**. The variance of \$123 unfavorable is based on the actual quantity used.
- Answer (C) is **correct**. The materials purchase price variance equals the quantity purchased multiplied by the difference between the standard price and the actual price, or \$135 unfavorable [4,500 lbs.  $\times$  (\$0.75 – \$0.72)].
- Answer (D) is **incorrect**. The variance of \$150 unfavorable is based on the assumption that 5,000 lbs. were purchased.

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**[Fact Pattern #2]**

ChemKing uses a standard costing system in the manufacture of its single product. The 35,000 units of direct materials in inventory were purchased for \$105,000, and two units of direct materials are required to produce one unit of final product. In November, the company produced 12,000 units of product. The standard allowed for materials was \$60,000, and the unfavorable quantity variance was \$2,500.

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**[5] Gleim #: 7.3.25 -- Source: CMA 1293 3-22**

(Refers to Fact Pattern #2)

ChemKing's standard price for one unit of direct materials is

- A. \$2.00
- B. \$2.50
- C. \$3.00
- D. \$5.00

- Answer (A) is **incorrect**. The unit standard cost is \$2.50.
- Answer (B) is **correct**. Given that the company produced 12,000 units with a total standard cost for direct materials of \$60,000, the standard cost must be \$5.00 ( $\$60,000 \div 12,000$  units) per unit of finished product. Because each unit of finished product requires two units of direct materials, the standard unit cost for direct materials must be \$2.50.
- Answer (C) is **incorrect**. The actual cost per unit of direct materials is \$3.
- Answer (D) is **incorrect**. The total standard cost of direct materials for each unit of finished product is \$5.

**[6] Gleim #: 7.3.26 -- Source: CMA 1293 3-23**

(Refers to Fact Pattern #2)

ChemKing's units of direct materials used to produce November output totaled

- A. 12,000 units.
- B. 12,500 units.
- C. 23,000 units.
- D. 25,000 units.

- Answer (A) is **incorrect**. The number of units of finished product is 12,000.
- Answer (B) is **incorrect**. Assuming that each unit of finished product includes only one unit of direct materials results in 12,500 units.
- Answer (C) is **incorrect**. Assuming a favorable quantity variance results in 23,000 units.

- Answer (D) is **correct**. The company produced 12,000 units of output, each of which required two units of direct materials. Thus, the standard input allowed for direct materials was 24,000 units at a standard cost of \$2.50 each [ $\$60,000 \div (12,000 \text{ units of output} \times 2 \text{ units of direct materials})$ ]. An unfavorable quantity variance signifies that the actual quantity used was greater than the standard input allowed. The direct materials quantity variance equals the standard price per unit times the difference between actual and standard quantities. Consequently, because 1,000 ( $\$2,500 \text{ U} \div \$2.50$ ) additional units were used, the actual total quantity must have been 25,000 units (24,000 standard + 1,000).

**[7] Gleim #: 7.3.27 -- Source: CMA 1293 3-24**

(Refers to Fact Pattern #2)

ChemKing's direct materials price variance for the units used in November was

- A. \$2,500 unfavorable.
- B. \$11,000 unfavorable.
- C. \$12,500 unfavorable.
- D. \$3,500 unfavorable.

- Answer (A) is **incorrect**. The direct materials quantity variance is \$2,500 unfavorable.
- Answer (B) is **incorrect**. The price variance is \$12,500, or \$.50 per unit.
- Answer (C) is **correct**. The standard price was \$2.50 [ $\$60,000 \div (12,000 \text{ units of output} \times 2 \text{ units of direct materials})$ ]. An unfavorable quantity variance of \$2,500 means that 1,000 ( $\$2,500 \text{ U} \div \$2.50$ ) additional units were used, resulting in an actual total quantity of 25,000 units [ $(12,000 \text{ units of output} \times 2 \text{ units of direct materials}) + 1,000$ ]. Actual price was \$3.00 ( $\$105,000 \text{ total cost} \div 35,000 \text{ units purchased}$ ). Consequently, the direct materials price variance is \$12,500 unfavorable  $\{AQ \times (AP - SP) = [25,000 \text{ units} \times (\$3.00 - \$2.50)]\}$ .
- Answer (D) is **incorrect**. The price variance is \$12,500, or \$.50 per unit.

**[8] Gleim #: 7.3.28 -- Source: CMA 694 3-23**

A favorable materials price variance coupled with an unfavorable materials usage variance most likely results from

- A. Machine efficiency problems.
- B. Product mix production changes.
- C. The purchase and use of higher-than-standard quality materials.
- D. The purchase of lower than standard quality materials.

- Answer (A) is **incorrect**. Machine efficiency problems do not explain the price variance.
- Answer (B) is **incorrect**. A change in product mix does not explain the price variance.
- Answer (C) is **incorrect**. Materials of higher-than-standard quality are more likely to cause an unfavorable price variance and a favorable quantity variance.
- Answer (D) is **correct**. A favorable materials price variance is the result of paying less than the standard price for materials. An unfavorable materials usage variance is the result of using an excessive quantity of materials. If a purchasing manager were to buy substandard materials to achieve a favorable price variance, an unfavorable quantity variance could result from using an excessive amount of poor quality materials.

**[9] Gleim #: 7.3.29 -- Source: CMA 1294 3-24**

Tower Company planned to produce 3,000 units of its single product, Titactium, during November. The standard specifications for one unit of Titactium include 6 pounds of materials at \$.30 per pound. Actual production in November was 3,100 units of Titactium. The accountant computed a favorable direct materials purchase price variance of \$380 and an unfavorable direct materials quantity variance of \$120. Based on these variances, one could conclude that

- A. More materials were purchased than were used.
  - B. More materials were used than were purchased.
  - C. The actual cost of materials was less than the standard cost.
  - D. The actual usage of materials was less than the standard allowed.
- 
- Answer (A) is **incorrect**. No variance relates quantity purchased to quantity used.
  - Answer (B) is **incorrect**. No variance relates quantity purchased to quantity used.
  - Answer (C) is **correct**. The direct materials purchase price variance may be isolated at the time of purchase or at the time of transfer to production. It equals the actual quantity of materials purchased or transferred times the difference between the standard and actual unit prices. Hence, a favorable direct materials purchase price variance means that materials were purchased at a price less than the standard price.
  - Answer (D) is **incorrect**. The unfavorable quantity variance indicates that more materials were used than allowed by the standards. The direct materials quantity variance equals the standard unit price times the difference between the standard quantity allowed for the actual output and the actual quantity used.

**[10] Gleim #: 7.3.30 -- Source: CMA 1296 3-21**

David Rogers, purchasing manager at Fairway Manufacturing Corporation, was able to acquire a large quantity of direct materials from a new supplier at a discounted price. Marion Conner, inventory supervisor, is concerned because the warehouse has become crowded and some things had to be rearranged. Brian Jones, vice president of production, is concerned about the quality of the discounted materials. However, the Engineering Department tested the new materials and indicated that they are of acceptable quality. At the end of the month, Fairway experienced a favorable direct materials usage variance, a favorable direct labor usage variance, and a favorable direct materials price variance. The usage variances were solely the result of a higher yield from the new material. The favorable direct materials price variance is considered the responsibility of the

- A. Purchasing manager.
- B. Inventory supervisor.
- C. Vice president of production.
- D. Engineering manager.

- Answer (A) is **correct**. A direct materials price variance is the actual quantity used times the difference between the standard and actual prices. It is normally considered the responsibility of the purchasing manager because no one else has an opportunity to influence the price. In this case, the purchasing manager obtained the discount that led to the favorable price variance.
- Answer (B) is **incorrect**. An inventory supervisor has no influence over the price paid for materials.
- Answer (C) is **incorrect**. The vice president receives the materials without knowing the price.
- Answer (D) is **incorrect**. The engineering manager is concerned only with the quality of the materials.

**[11] Gleim #: 7.3.31 -- Source: CMA 695 3-25**

Price variances and efficiency variances can be key to the performance measurement within a company. In evaluating the performance within a company, a materials efficiency variance can be caused by all of the following **except** the

- A. Performance of the workers using the material.
- B. Actions of the purchasing department.
- C. Design of the product.
- D. Sales volume of the product.

- Answer (A) is **incorrect**. Worker performance is a possible cause of a materials efficiency variance.
- Answer (B) is **incorrect**. Purchasing department actions are possible causes of a materials efficiency variance.
- Answer (C) is **incorrect**. Product design is a possible cause of a materials efficiency variance.
- Answer (D) is **correct**. An unfavorable materials quantity or usage (efficiency) variance can be caused by a number of factors, including waste, shrinkage, theft, poor performance by production workers, nonskilled workers, or the purchase of below-standard-quality materials by the purchasing department. Changes in product design can also affect the quantity of materials used. Sales volume of the product should not be a contributing factor to a materials efficiency variance.

**[12] Gleim #: 7.3.32 -- Source: CMA 1287 4-30**

Todco planned to produce 3,000 units of its single product, Teragram, during November. The standard specifications for one unit of Teragram include six pounds of materials at \$.30 per pound. Actual production in November was 3,100 units of Teragram. The accountant computed a favorable materials purchase price variance of \$380 and an unfavorable materials quantity variance of \$120. Based on these variances, one could conclude that

- A. More materials were purchased than were used.
  - B. More materials were used than were purchased.
  - C. The actual cost of materials was less than the standard cost.
  - D. The actual usage of materials was less than the standard allowed.
- 
- Answer (A) is **incorrect**. The quantity of materials purchased cannot be determined from the information given.
  - Answer (B) is **incorrect**. The quantity of materials purchased cannot be determined from the information given.
  - Answer (C) is **correct**. A favorable price variance indicates that the materials were purchased at a price less than standard. The unfavorable quantity variance indicates that the quantity of materials used for actual production exceeded the standard quantity for the good units produced.
  - Answer (D) is **incorrect**. The actual usage was greater than standard.

**[13] Gleim #: 7.3.33 -- Source: CMA 1295 3-25**

Which one of the following variances is most controllable by the production control supervisor?

- A. Materials price variance.
- B. Materials usage variance.
- C. Variable overhead spending variance.
- D. Fixed overhead budget variance.

- Answer (A) is **incorrect**. The materials price variance can be greatly influenced by the purchasing manager.
- Answer (B) is **correct**. The production control supervisor has the most control over the materials usage variance. The materials usage variance measures the excess amount of materials used over the amount specified in the standards. The materials usage (or materials quantity) variance, when unfavorable, is often attributable to waste, shrinkage, or theft in the production areas. The excess usage occurs under the supervision of the production department.
- Answer (C) is **incorrect**. The variable overhead spending variance is both a quantity and a price variance. Prices paid are not controllable by the production control supervisor.
- Answer (D) is **incorrect**. Fixed overhead variances can be controlled by the manufacturing departments, but only to a lesser extent than materials usage. The controllability is split between manufacturing and management.

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**[Fact Pattern #3]**

The controller for Durham Skates is reviewing the production cost report for July. An analysis of direct materials costs reflects an unfavorable flexible budget variance of \$25. The plant manager believes this is excellent performance on a flexible budget for 5,000 units of direct materials. However, the production supervisor is not pleased with this result because she claims to have saved \$1,200 in materials cost on actual production using 4,900 units of direct materials. The standard materials cost is \$12 per unit. Actual materials used for the month amounted to \$60,025.

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[14] Gleim #: 7.3.34 -- Source: CMA 697 3-22

(Refers to Fact Pattern #3)

Durham's actual average cost per unit for materials was

- A. \$12.00
- B. \$12.01
- C. \$12.24
- D. \$12.25

- Answer (A) is **incorrect**. The standard cost is \$12.
- Answer (B) is **incorrect**. The amount of \$12.01 is based on the budgeted usage.
- Answer (C) is **incorrect**. The \$60,000 standard cost for 5,000 units divided by 4,900 units equals \$12.24.
- Answer (D) is **correct**. Dividing the actual cost of \$60,025 by the 4,900 units used results in an average cost of \$12.25 per unit.

[15] Gleim #: 7.3.35 -- Source: CMA 697 3-23

(Refers to Fact Pattern #3)

If Durham's direct materials variance is investigated further, it will reflect a price variance of

- A. Zero.
- B. \$1,200 favorable.
- C. \$1,225 unfavorable.
- D. \$2,500 favorable.

- Answer (A) is **incorrect**. A price variance exists. The actual price paid was greater than the standard allowed.
- Answer (B) is **incorrect**. The variance is unfavorable.
- Answer (C) is **correct**. The price variance equals the actual quantity times the difference between the actual price and the standard price. The actual price is \$12.25, and the standard price is \$12 (given). Thus, the price variance is \$1,225 unfavorable  $\{AQ \times (AP - SP) = [4,900 \text{ units} \times (\$12.25 \text{ actual} - \$12.00 \text{ standard})]\}$ .
- Answer (D) is **incorrect**. The variance is unfavorable.

**[16] Gleim #: 7.3.36 -- Source: CMA 1295 3-11**

In a standard cost system, the investigation of an unfavorable materials usage variance should begin with the

- A. Production manager only.
- B. Plant controller only.
- C. Purchasing manager only.
- D. Production manager or the purchasing manager.

- Answer (A) is **incorrect**. Both the purchasing manager and the production manager could be at fault.
- Answer (B) is **incorrect**. The plant controller is at too high a level for an investigation of a materials usage variance.
- Answer (C) is **incorrect**. Both the purchasing manager and the production manager could be at fault.
- Answer (D) is **correct**. An unfavorable materials quantity variance is usually caused by waste, shrinkage, or theft. Alternatively, an unfavorable variance could be attributable to the purchasing department's not buying the proper quality of materials in an attempt to achieve a favorable material price variance. Thus, either the production manager or the purchasing manager could be responsible for a material usage variance.

**[17] Gleim #: 7.3.37 -- Source: CMA 694 3-20**

Under a standard cost system, the materials price variances are usually the responsibility of the

- A. Production manager.
- B. Cost accounting manager.
- C. Sales manager.
- D. Purchasing manager.

- Answer (A) is **incorrect**. The production manager has no control over the price paid for materials.
- Answer (B) is **incorrect**. The cost accounting manager has no control over the price paid for materials.
- Answer (C) is **incorrect**. The sales manager has no control over the price paid for materials.



- Answer (D) is **correct**. The materials price variance is the difference between the standard price and the actual price paid for materials. This variance is usually the responsibility of the purchasing department. Thus, the purchasing manager has an incentive to obtain the best price possible.

**[25] Gleim #: 7.3.45 -- Source: CMA 0408 2-216**

A company has a raw material price variance that is unfavorable. An analysis of this variance indicates that the company's only available supplier of one of its raw materials unexpectedly raised the price of the material. The action management should take regarding this situation should be to

- A. Negatively evaluate the performance of the purchasing manager.
  - B. Negatively evaluate the performance of the production manager.
  - C. Change the raw material price standard.
  - D. Ask the production manager to lower the material usage standard to compensate for higher material costs.
- Answer (A) is **incorrect**. An action by the supplier is beyond the control of the purchasing manager.
  - Answer (B) is **incorrect**. An action by the supplier is beyond the control of the production manager.
  - Answer (C) is **correct**. Since there is only one source for the raw material, the standard cost should be changed to reflect the firm's true situation.
  - Answer (D) is **incorrect**. A change in price does not affect how efficiently a material can be used.

**[26] Gleim #: 7.3.46 -- Source: CMA 0408 2-234**

Frisco Company recently purchased 108,000 units of raw material for \$583,200. Three units of raw materials are budgeted for use in each finished good manufactured, with the raw material standard set at \$16.50 for each completed product. Frisco manufactured 32,700 finished units during the period just ended and used 99,200 units of raw material. If management is concerned about the timely reporting of variances in an effort to improve cost control and bottom-line performance, the materials purchase price variance should be reported as

- A. \$6,050 unfavorable.
- B. \$9,920 favorable.
- C. \$10,800 unfavorable.
- D. \$10,800 favorable.

- Answer (A) is **incorrect**. The materials quantity variance is \$6,050 unfavorable; it results from using the difference between the quantity actually consumed and the “expected” quantity.
- Answer (B) is **incorrect**. The materials price variance is \$9,920 favorable; it results from using the quantity actually consumed instead of the quantity purchased.
- Answer (C) is **incorrect**. Reversing the order of the subtraction of standard and actual price results in \$10,800 unfavorable.
- Answer (D) is **correct**. The general formula for the purchase price variance is quantity purchased times (standard price minus actual price). The standard price equals the materials charge per finished unit divided by the number of inputs per finished unit ( $\$16.50 \div 3 = \$5.50$ ), and the actual price equals the total amount paid for materials purchased (not just used) divided by the number purchased ( $\$583,200 \div 108,000 = \$5.40$ ). Frisco’s purchase price variance is therefore calculated as follows:  $[108,000 \times (\$5.50 - \$5.40)] = \$10,800 \text{ F}$ .

**[27] Gleim #: 7.3.47 -- Source: CMA 0408 2-235**

Christopher Akers is the chief executive officer of SBL, Inc., a masonry contractor. The financial statements have just arrived showing a \$3,000 loss on the new stadium job that was budgeted to show a \$6,000 profit. Actual and budget information relating to the materials for the job are as follows.

	<u>Actual</u>	<u>Budget</u>
Bricks -- number of bundles	3,000	2,850
Bricks -- cost per bundle	\$7.90	\$8.00

Which one of the following is a **correct** statement regarding the stadium job for SBL?

- A. The price variance was favorable by \$285.
  - B. The price variance was favorable by \$300.
  - C. The efficiency variance was unfavorable by \$1,185.
  - D. The flexible budget variance was unfavorable by \$900.
- Answer (A) is **incorrect**. The budgeted units of input times the difference between the standard and actual price, an undefined variance, results in \$285 favorable.
  - Answer (B) is **correct**. The direct materials price variance is defined as the actual quantity used in production times the standard price minus the actual price. In SBL's case, this calculation is  $[3,000 \text{ units} \times (\$8.00 - \$7.90)] = \$300$  favorable.
  - Answer (C) is **incorrect**. The efficiency variance cannot be determined without knowing the actual level of output and the standard units of input per unit of output.
  - Answer (D) is **incorrect**. The flexible budget variance cannot be determined without knowing the actual level of output and the standard units of input per unit of output.

[28] Gleim #: 7.3.48 -- Source: CMA 0408 2-236

A company isolates its raw material price variance in order to provide the earliest possible information to the manager responsible for the variance. The budgeted amount of material usage for the year was computed as follows:

$$150,000 \text{ units of finished goods} \times 3 \text{ lbs./unit} \times \$2.00/\text{lb.} = \$900,000$$

Actual results for the year were the following.

Finished goods produced	160,000 units
Raw materials purchased	500,000 pounds
Raw materials used	490,000 pounds
Cost per pound	\$2.02

The raw material price variance for the year was

- A. \$9,600 unfavorable.
- B. \$9,800 unfavorable.
- C. \$10,000 unfavorable.
- D. \$20,000 unfavorable.

- Answer (A) is **incorrect**. The expected quantity (the actual units produced times the standard inputs per unit of output) times the standard price minus the actual price, an undefined variance, equals \$9,600 unfavorable.
- Answer (B) is **incorrect**. Using the quantity consumed instead of the quantity purchased results in \$9,800 unfavorable.
- Answer (C) is **correct**. The direct materials price variance, when it is isolated early, is calculated as the quantity purchased times the standard price minus the actual price (this firm has decided that waiting until the quantity actually used is known delays the usefulness of the calculation). The calculation is therefore  $[500,000 \times (\$2.00 - \$2.02)] = \$10,000$  unfavorable.
- Answer (D) is **incorrect**. The quantity (efficiency) variance is \$20,000 unfavorable.

**[29] Gleim #: 7.3.49 -- Source: CMA 0408 2-238**

At the beginning of the year, Douglas Company prepared the following monthly budget for direct materials.

Units produced and sold	10,000	15,000
Direct material	\$15,000	\$22,500

At the end of the month, the company's records showed that 12,000 units were produced and sold and \$20,000 was spent for direct materials. Each unit of output requires one unit of direct material. The flexible budget variance for direct materials is

- A. \$2,000 favorable.
- B. \$2,000 unfavorable.
- C. \$5,000 favorable.
- D. \$5,000 unfavorable.

- Answer (A) is **incorrect**. Reversing the order of subtraction results in \$2,000 favorable.
- Answer (B) is **correct**. The standard per-unit cost of direct materials can be found by dividing the total cost at either budgeted level of production by the units at that level ( $\$15,000 \div 10,000 = \$1.50$  per unit or  $\$22,500 \div 15,000 = \$1.50$  per unit). Since 12,000 units were actually consumed, the flexible budget for direct materials, that is, the amount that should have been spent given the achieved level of production, was \$18,000 ( $12,000 \times \$1.50$ ). The difference between the flexible budget and the actual amount spent on direct materials is the flexible budget variance ( $\$18,000 - \$20,000 = \$2,000$  U).
- Answer (C) is **incorrect**. Improperly treating the production range in units as a dollar variance results in \$5,000 favorable.
- Answer (D) is **incorrect**. Improperly treating the production range in units as a dollar variance results in \$5,000 unfavorable.

**[30] Gleim #: 7.3.50 -- Source: CMA 0408 2-241**

Richter Company has an unfavorable materials efficiency (usage) variance for a particular month. Which one of the following is **least** likely to be the cause of this variance?

- A. Inadequate training of the direct labor employees.
- B. Poor performance of the shipping employees.
- C. Poor design of the production process or product.
- D. Poor quality of the raw materials.

- Answer (A) is **incorrect**. Inadequate training of workers can result in excessive waste of materials.
- Answer (B) is **correct**. Shipping employees send out finished products to customers. They are not involved in the production process.
- Answer (C) is **incorrect**. Poor design of the production process or product can result in high levels of wasted inputs.
- Answer (D) is **incorrect**. The inevitable waste associated with poor quality materials can result in a higher-than-expected usage level.

**[31] Gleim #: 7.3.51 -- Source: CMA 0408 2-251**

Fortune Corporation's Marketing Department recently accepted a rush order for a nonstock item from a valued customer. The Marketing Department filed the necessary paperwork with the Production Department, which complained greatly about the lack of time to do the job the right way. Nevertheless, the Production Department accepted the manufacturing commitment and filed the required paperwork with the Purchasing Department for the needed raw materials. A purchasing clerk temporarily misplaced the paperwork. By the time the paperwork was found, it was too late to order from the company's regular supplier. A new supplier was located, and that vendor quoted a very attractive price. The materials arrived and were rushed into production, bypassing the normal inspection processes (as directed by the Production Department supervisor) to make up for lost time. Unfortunately, the goods were of low quality and created considerable difficulty for Fortune's assembly-line personnel. Which of the following best indicates the responsibility for the materials usage variance in this situation?

- A. Purchasing.
- B. Purchasing and Marketing.
- C. Marketing and Production.
- D. Purchasing, Marketing, and Production.

- Answer (A) is **incorrect**. The Purchasing Department is not the only one responsible for the bad outcome.
- Answer (B) is **incorrect**. The Production Department also bears some responsibility for this situation.
- Answer (C) is **incorrect**. The Purchasing Department also bears some responsibility for this situation.

- Answer (D) is **correct**. All three departments bear responsibility for this fiasco. The Marketing Department should never have accepted a rush order for an item not carried in regular stock without first determining whether the Production Department would be able to fill the order on time and at an acceptable level of quality. The Purchasing Department did not give a rush order the appropriate level of attention; the paperwork should never have been in a position to be misplaced. The Production Supervisor should not have given in to pressure from the Marketing Department to bypass the normal inspection process; this simply led to more delays and lower quality.

**[32] Gleim #: 7.3.52 -- Source: CMA 0408 2-253**

Johnson, Inc., has established per-unit standards for material and labor for its production department based on 900 units of normal production capacity as shown below.

3 lbs. of direct materials @ \$4 per lb.	\$12
1 direct labor hour @ \$15 per hr.	<u>15</u>
Standard cost per unit	<u><u>\$27</u></u>

During the year, 1,000 units were produced. The accounting department has charged the production department supervisor with the following unfavorable variances.

Materials Quantity Variance	
Actual usage	3,300 lbs.
Standard usage	<u>3,000 lbs.</u>
Unfavorable	<u><u>300 lbs.</u></u>

Material Price Variance	
Actual cost	\$4,200
Standard cost	<u>4,000</u>
Unfavorable	<u><u>\$ 200</u></u>

Bob Sterling, the production supervisor, has received a memorandum from his boss stating that he did not meet the established standards for material prices and quantity, and corrective action should be taken. Sterling is very unhappy about the situation and is preparing to reply to the memorandum explaining the reasons for his dissatisfaction. All of the following are valid reasons for Sterling's dissatisfaction **except** that the

- A. Material price variance is the responsibility of the purchasing department.
  - B. Cause of the unfavorable material usage variance was the acquisition of substandard material.
  - C. Standards have not been adjusted to the engineering changes.
  - D. Variance calculations fail to properly reflect that actual production exceeded normal production capacity.
- Answer (A) is **incorrect**. This is a valid argument; the production supervisor has no control over the price for raw materials negotiated by Purchasing.
  - Answer (B) is **incorrect**. This is a valid argument; the production supervisor has no control over the quality of raw materials procured by Purchasing.



- Answer (C) is **incorrect**. This is a valid argument; the production supervisor cannot be held responsible if the standards have not been adjusted for engineering changes in the process.
- Answer (D) is **correct**. The production supervisor displays a misunderstanding of the variance process by raising this issue. Variance calculations are specifically designed to isolate the effects of actual production varying from normal production. Also, the materials variances should not be affected by the higher production.

**[33] Gleim #: 7.3.53 -- Source: CMA 0408 2-255**

During the month of May, Tyler Company experienced a significant unfavorable material efficiency variance in the production of its single product at one of Tyler's plants. Which one of the following reasons would be **least** likely to explain why the unfavorable variance arose?

- A. Inferior materials were purchased.
  - B. Actual production was lower than planned production.
  - C. Workers used were less skilled than expected.
  - D. Replacement production equipment had just been installed.
- Answer (A) is **incorrect**. Inferior raw materials can be a cause of an unfavorable materials efficiency variance.
  - Answer (B) is **correct**. An unfavorable material efficiency variance means that excess materials were used during production. This might be due to buying inferior quality materials or using workers who were not as skilled in working with the materials. Also, new equipment might damage materials during early production runs.
  - Answer (C) is **incorrect**. Less-skilled workers can tend to be wasteful of raw materials, leading to an unfavorable efficiency variance.
  - Answer (D) is **incorrect**. The use of unfamiliar equipment can result in an unfavorable materials efficiency variance.

[1] Gleim #: 7.4.54 -- Source: CMA 1296 3-24

The inventory control supervisor at Wilson Manufacturing Corporation reported that a large quantity of a part purchased for a special order that was never completed remains in stock. The order was not completed because the customer defaulted on the order. The part is not used in any of Wilson's regular products. After consulting with Wilson's engineers, the vice president of production approved the substitution of the purchased part for a regular part in a new product. Wilson's engineers indicated that the purchased part could be substituted providing it was modified. The units manufactured using the substituted part required additional direct labor hours resulting in an unfavorable direct labor efficiency variance in the Production Department. The unfavorable direct labor efficiency variance resulting from the substitution of the purchased part in inventory is best assigned to the

- A. Sales manager.
- B. Inventory supervisor.
- C. Production manager.
- D. Vice president of production.

- Answer (A) is **incorrect**. The sales manager did not make the substitution decision.
- Answer (B) is **incorrect**. The inventory supervisor did not make the substitution decision.
- Answer (C) is **incorrect**. The production manager did not make the substitution decision.
- Answer (D) is **correct**. An unfavorable direct labor efficiency variance is normally charged to the production manager, the person with the most control over the amount and kinds of direct labor used. However, that individual is not responsible. (S)he was told to use the nonconforming part that required extra labor time. Thus, the variance should be charged to the vice president of production, the individual who most influenced the incurrence of the cost.

[2] Gleim #: 7.4.55 -- Source: CMA 694 3-22

Under a standard cost system, direct labor price variances are usually **not** attributable to

- A. Union contracts approved before the budgeting cycle.
- B. Labor rate predictions.
- C. The use of a single average standard rate.
- D. The assignment of different skill levels of workers than planned.

- Answer (A) is **correct**. The direct labor price (rate) variance is the actual hours worked times the difference between the standard rate and the actual rate paid. This difference may be attributable to (1) a change in labor rates since the establishment of the standards, (2) using a single average standard rate despite different rates earned among different employees, (3) assigning higher-paid workers to jobs estimated to require lower-paid workers (or vice versa), or (4) paying hourly rates, but basing standards on piecework rates (or vice versa). The difference should not be caused by a union contract approved before the budgeting cycle because such rates would have been incorporated into the standards.
- Answer (B) is **incorrect**. Predictions about labor rates may have been inaccurate.
- Answer (C) is **incorrect**. Using a single average standard rate may lead to variances if some workers are paid more than others and the proportions of hours worked differ from estimates.
- Answer (D) is **incorrect**. Assigning higher paid (and higher skilled) workers to jobs not requiring such skills leads to an unfavorable variance.

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**[Fact Pattern #1]**

Zazoo, Inc. specializes in reviewing and editing technical magazine articles. Zazoo sets the following standards for evaluating the performance of the professional staff:

Annual budgeted fixed costs for normal capacity level of 10,000 articles reviewed and edited	\$600,000
Standard professional hours per 10 articles	200 hours
Flexible budget of standard labor costs to process 10,000 articles	\$10,000,000

The following data apply to the 9,500 articles that were actually reviewed and edited during the current year.

Total hours used by professional staff	192,000 hours
Flexible costs	\$9,120,000
Total cost	\$9,738,000

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**[3] Gleim #: 7.4.56 -- Source: CMA 692 3-17**

(Refers to Fact Pattern #1)

Zazoo's labor efficiency variance for the year is

- A. \$100,000 unfavorable.
- B. \$238,000 unfavorable.
- C. \$380,000 favorable.
- D. \$500,000 favorable.

- Answer (A) is **correct**. The labor efficiency variance is the standard cost per hour times the difference between standard and actual hour. The standard labor rate is \$50 per hour, and the standard time allowed for 9,500 articles is 190,000 hours ( $9,500 \times 20$ ). Actual hours worked totaled 192,000. Thus, an unfavorable variance of 2,000 hours occurred. The unfavorable labor efficiency variance is therefore \$100,000 ( $2,000 \text{ hours} \times \$50$ ).
- Answer (B) is **incorrect**. The difference between the standard labor cost (\$9,500,000) and total actual (fixed + variable) cost (\$9,738,000) is \$238,000.
- Answer (C) is **incorrect**. The variance is unfavorable.
- Answer (D) is **incorrect**. The efficiency variance is based on standard hours for actual production levels--in this case, 190,000 hours.

**[Fact Pattern #2]**

Jackson Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Jackson has established the following standards for the prime costs of one unit of product.

	Standard Quantity	Standard Price	Standard Cost
Direct materials	5 pounds	\$ 3.60/pound	\$18.00
Direct labor	1.25 hours	\$12.00/hour	15.00
			<u>\$33.00</u>

During May, Jackson purchased 125,000 pounds of direct materials at a total cost of \$475,000. The total factory wages for May were \$364,000, 90% of which were for direct labor. Jackson manufactured 22,000 units of product during May using 108,000 pounds of direct materials and 28,000 direct labor hours.

**[4] Gleim #: 7.4.57 -- Source: CMA 692 3-19**

(Refers to Fact Pattern #2)

Jackson's direct materials usage (quantity) variance for May is

- A. \$7,200 unfavorable.
- B. \$7,600 favorable.
- C. \$5,850 unfavorable.
- D. \$7,200 favorable.

- Answer (A) is **incorrect**. The variance is favorable.
- Answer (B) is **incorrect**. The variance is calculated by multiplying the quantity difference times the standard unit cost of \$3.60, not the actual unit cost.
- Answer (C) is **incorrect**. The variance is favorable. Actual usage was less than the standard.
- Answer (D) is **correct**. This variance equals the standard unit cost times the difference between the actual quantity used and the standard quantity for good production. Consequently, the variance is \$7,200 favorable  $\{[(5 \text{ pounds} \times 22,000 \text{ units}) - 108,000 \text{ pounds used}] \times \$3.60\}$ .

**[5] Gleim #: 7.4.58 -- Source: CMA 692 3-20**

(Refers to Fact Pattern #2)

Jackson's direct labor price (rate) variance for May is

- A. \$8,400 favorable.
- B. \$7,200 unfavorable.
- C. \$8,400 unfavorable.
- D. \$6,000 unfavorable.

- Answer (A) is **correct**. The direct labor rate variance equals the actual quantity of hours worked times the difference between the standard and actual labor rates. Total direct labor cost was \$327,600 ( $\$364,000 \times 90\%$ ), and the actual unit direct labor cost was \$11.70 ( $\$327,600 \div 28,000 \text{ hours}$ ). Thus, the variance is \$8,400 favorable  $[28,000 \text{ hours} \times (\$12.00 - \$11.70)]$ .
- Answer (B) is **incorrect**. The variance is favorable. The actual labor rate was less than the standard rate.
- Answer (C) is **incorrect**. The variance is favorable. The actual labor rate was less than the standard rate.

- Answer (D) is **incorrect**. The labor efficiency variance is \$6,000, not the labor rate variance.

**[6] Gleim #: 7.4.59 -- Source: CMA 692 3-21**

(Refers to Fact Pattern #2)

Jackson's direct labor usage (efficiency) variance for May is

- A. \$5,850 favorable.
- B. \$6,000 unfavorable.
- C. \$5,850 unfavorable.
- D. \$6,000 favorable.

- Answer (A) is **incorrect**. The variance is unfavorable. More hours were worked than allowed by the standards.
- Answer (B) is **correct**. The direct labor efficiency variance equals the standard unit cost times the difference between actual hours and standard hours. Accordingly, the variance is \$6,000 unfavorable  $\{[28,000 \text{ hours} - (1.25 \text{ hours} \times 22,000 \text{ units})] \times \$12\}$ .
- Answer (C) is **incorrect**. The labor efficiency variance is calculated using the standard labor rate, not the actual labor rate.
- Answer (D) is **incorrect**. The variance is unfavorable.

**[7] Gleim #: 7.4.60 -- Source: CMA 693 3-15**

The static budget for the month of May was for 9,000 units with direct materials at \$15 per unit. Direct labor was budgeted at 45 minutes per unit for a total of \$81,000. Actual output for the month was 8,500 units with \$127,500 in direct materials and \$77,775 in direct labor expense. The direct labor standard of 45 minutes was maintained throughout the month. Variance analysis of the performance for the month of May shows a(n)

- A. Favorable direct materials usage variance of \$7,500.
  - B. Favorable direct labor efficiency variance of \$1,275.
  - C. Unfavorable direct labor efficiency variance of \$1,275.
  - D. Unfavorable direct labor price variance of \$1,275.
- Answer (A) is **incorrect**. The amount of \$7,500 equals the difference between the static budget output (9,000 units) and the flexible budget output (8,500 units), multiplied by the budgeted unit cost of direct materials (\$15). This amount is not a direct materials usage variance  $[(\text{actual quantity of input} - \text{standard quantity of input}) \times \text{standard price of input}]$ .

- Answer (B) is **incorrect**. No direct labor efficiency variance occurred. Budgeted hours were identical to actual hours for 8,500 units.
- Answer (C) is **incorrect**. No direct labor efficiency variance occurred. Budgeted hours were identical to actual hours for 8,500 units.
- Answer (D) is **correct**. Because direct labor for 9,000 units was budgeted at \$81,000, the unit direct labor cost is \$9. Thus, the direct labor budget for 8,500 units is \$76,500, and the total direct labor variance is \$1,275 (\$77,775 – \$76,500). Because the actual cost is greater than the budgeted amounts, the \$1,275 variance is unfavorable. Given that the actual time per unit (45 minutes) was the same as that budgeted, no direct labor efficiency variance was incurred. Hence, the entire \$1,275 unfavorable variance must be attributable to the direct labor rate (or price) variance.

**[8] Gleim #: 7.4.61 -- Source: CMA 1294 3-25**

An unfavorable direct labor efficiency variance could be caused by a(n)

- A. Unfavorable variable overhead spending variance.
  - B. Unfavorable direct materials usage variance.
  - C. Unfavorable fixed overhead volume variance.
  - D. Favorable variable overhead spending variance.
- Answer (A) is **incorrect**. The variable overhead spending variance may be affected by, but does not affect, a direct labor efficiency variance. It equals the difference between actual variable overhead, which includes indirect but not direct labor, and the variable overhead applied based on the standard rate and the actual activity level, which may or may not be measured in direct labor hours. Thus, the effect of an unfavorable direct labor efficiency variance is to decrease an unfavorable variable overhead spending variance or to increase a favorable variable overhead spending variance.
  - Answer (B) is **correct**. An unfavorable direct labor efficiency variance indicates that actual hours exceeded standard hours. Too many hours may have been used because of inefficiency on the part of employees, excessive coffee breaks, machine down-time, inadequate materials, or materials of poor quality that required excessive rework. An unfavorable direct materials usage variance might be related to an unfavorable labor efficiency variance. Working on a greater quantity of direct materials may require more direct labor time.
  - Answer (C) is **incorrect**. The fixed overhead volume variance does not affect, and is not affected by, a direct labor efficiency variance. It equals the difference between budgeted fixed overhead and the fixed overhead applied based on the standard rate and the standard input (e.g., direct labor) allowed for the actual output.

- Answer (D) is **incorrect**. The variable overhead spending variance may be affected by, but does not affect, a direct labor efficiency variance. It equals the difference between actual variable overhead, which includes indirect but not direct labor, and the variable overhead applied based on the standard rate and the actual activity level, which may or may not be measured in direct labor hours. Thus, the effect of an unfavorable direct labor efficiency variance is to decrease an unfavorable variable overhead spending variance or to increase a favorable variable overhead spending variance.

**[9] Gleim #: 7.4.62 -- Source: CMA 692 3-15**

(Refers to Fact Pattern #1)

Using a flexible budget, Zazoo's total cost planned for the review and editing of 9,500 articles should be

- A. \$9,500,000
- B. \$10,070,000
- C. \$10,100,000
- D. \$10,570,000

- Answer (A) is **incorrect**. Variable labor costs only equal \$9,500,000.
- Answer (B) is **incorrect**. This is calculated by incorrectly adjusting the fixed costs downward for production.
- Answer (C) is **correct**. The flexible budget provides for a cost of \$1,000 per article ( $\$10,000,000 \div 10,000$  articles). Each article should require 20 hours of labor ( $200 \text{ hours} \div 10 \text{ articles}$ ). Thus, the standard labor rate is \$50 per hour ( $\$1,000 \div 20 \text{ hours}$ ), and total standard variable labor cost is \$9,500,000 ( $9,500 \text{ articles} \times 20 \text{ hours} \times \$50 \text{ per hour}$ ). Accordingly, total expected costs are \$10,100,000 ( $\$9,500,000 + \$600,000 \text{ FC}$ ).
- Answer (D) is **incorrect**. Labor costs will decline as production declines, but fixed costs will not. This is incorrectly calculated by adding the standard labor costs for 10,000 articles to a reduced fixed cost calculated for 9,500 articles.

**[10] Gleim #: 7.4.63 -- Source: CMA 692 3-16**

(Refers to Fact Pattern #1)

Zazoo's fixed cost spending variance for the year is

- A. \$18,000 unfavorable.
- B. \$30,000 favorable.
- C. \$48,000 unfavorable.
- D. \$18,000 favorable.



- Answer (A) is **correct**. Budgeted fixed costs are \$600,000. The actual fixed costs were \$618,000 (\$9,738,000 total costs – \$9,120,000 flexible costs). Because actual costs were \$18,000 higher than the budget, the variance is unfavorable.
- Answer (B) is **incorrect**. The variance is unfavorable.
- Answer (C) is **incorrect**. The variance of \$48,000 is based on a false presumption that fixed costs will be less at a 9,500 production level than a 10,000 level.
- Answer (D) is **incorrect**. The variance is unfavorable.

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**[Fact Pattern #3]**

Arrow Industries employs a standard cost system in which direct materials inventory is carried at standard cost. Arrow has established the following standards for the prime costs of one unit of product.

	Standard Quantity	Standard Price	Standard Cost
Direct materials	8 pounds	\$1.80 per pound	\$14.40
Direct labor	.25 hour	\$8.00 per hour	<u>2.00</u>
			<u>\$16.40</u>

During November, Arrow purchased 160,000 pounds of direct materials at a total cost of \$304,000. The total factory wages for November were \$42,000, 90% of which were for direct labor. Arrow manufactured 19,000 units of product during November using 142,500 pounds of direct materials and 5,000 direct labor hours.

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**[11] Gleim #: 7.4.64 -- Source: CMA 1291 3-2**

(Refers to Fact Pattern #3)

Arrow's direct materials usage (quantity) variance for November is

- A. \$14,400 unfavorable.
- B. \$1,100 favorable.
- C. \$17,100 unfavorable.
- D. \$17,100 favorable.

- Answer (A) is **incorrect**. The direct materials quantity variance is favorable because the actual quantity used is less than the standard quantity.
- Answer (B) is **incorrect**. The direct materials quantity variance equals the standard price multiplied times the difference between the actual and standard quantities.

- Answer (C) is **incorrect**. The direct materials quantity variance is favorable because the actual quantity used is less than the standard quantity.
- Answer (D) is **correct**. The direct materials quantity variance equals the standard price (\$1.80 per pound) times the difference between the actual and standard quantities. The actual quantity used was 142,500 pounds. The standard quantity is 8 pounds per unit of product. Given that 19,000 units were produced, the standard quantity for the actual output was 152,000 pounds (8 lbs.  $\times$  19,000 units). Hence, the direct materials quantity variance is \$17,100  $[(152,000 - 142,500) \times \$1.80]$ . Since the actual quantity used was less than the standard quantity, the variance is favorable.

**[12] Gleim #: 7.4.65 -- Source: CMA 1291 3-3**

(Refers to Fact Pattern #3)

Arrow's direct labor price (rate) variance for November is

- A. \$2,200 favorable.
  - B. \$1,900 unfavorable.
  - C. \$2,000 unfavorable.
  - D. \$2,090 favorable.
- Answer (A) is **correct**. The direct labor rate variance equals the actual quantity of labor used times the difference between the actual and standard prices for labor. The actual total price of labor was \$42,000, 90% of which was for direct labor. Thus, the price of direct labor was \$37,800. A total of 5,000 hours of direct labor was worked. Thus, the actual hourly rate was \$7.56  $(\$37,800 \div 5,000 \text{ hrs.})$ , and the variance is \$2,200  $[(\$8.00 - \$7.56) \times 5,000 \text{ hrs.}]$ . The actual rate was less than standard, so the variance is favorable.
  - Answer (B) is **incorrect**. The labor rate variance equals the actual quantity of labor used times the difference between the actual and standard prices for labor.
  - Answer (C) is **incorrect**. The labor rate variance equals the actual quantity of labor used times the difference between the actual and standard prices for labor.
  - Answer (D) is **incorrect**. The labor rate variance equals the actual quantity of labor used times the difference between the actual and standard prices for labor.

**[13] Gleim #: 7.4.66 -- Source: CMA 1291 3-4**

(Refers to Fact Pattern #3)

Arrow's direct labor usage (efficiency) variance for November is

- A. \$2,200 favorable.
- B. \$2,000 favorable.
- C. \$2,000 unfavorable.
- D. \$1,800 unfavorable.

- Answer (A) is **incorrect**. The direct labor efficiency variance equals the standard labor rate times the difference between actual and standard hours.
- Answer (B) is **incorrect**. The direct labor efficiency variance equals the standard labor rate times the difference between actual and standard hours.
- Answer (C) is **correct**. The direct labor efficiency variance equals the standard labor rate times the difference between actual and standard hours. Because each unit requires .25 hours of labor, the standard hours allowed for November would have been 4,750 ( $.25 \times 19,000$  units of output). Accordingly, the variance is \$2,000 [ $(4,750 \text{ standard hrs.} - 5,000 \text{ actual hrs.}) \times \$8.00 \text{ standard rate}$ ]. This variance is unfavorable because the actual hours exceeded the standard hours.
- Answer (D) is **incorrect**. The direct labor efficiency variance equals the standard labor rate times the difference between actual and standard hours.

**[30] Gleim #: 7.4.83 -- Source: CMA 0408 2-221**

A company has a direct labor price variance that is favorable. Of the following, the most serious concern the company may have about this variance is that

- A. The circumstances giving rise to the favorable variance will not continue in the future.
  - B. The production manager may not be using human resources as efficiently as possible.
  - C. The cause of the favorable variance may result in other larger unfavorable variances in the value-chain.
  - D. Actual production is less than budgeted production.
- Answer (A) is **incorrect**. The continuation of a favorable variance is not a cause for concern; the idea of a standard cost system is that there should be no variances of any type.

- Answer (B) is **incorrect**. The production manager may be using his resources efficiently, but that cannot be determined from the information given; perhaps the manager assigned the lower-paid workers to a job even though they were slower than more highly skilled workers.
- Answer (C) is **correct**. A favorable labor rate variance means the company is using lower-paid workers than what the standard-setters thought should be used. These workers are apparently less experienced or otherwise less skilled. As a result, the use of lower-paid workers may lead to an unfavorable labor efficiency variance or an unfavorable materials usage variance as the lower-skilled workers require more hours or more materials than would more skilled employees.
- Answer (D) is **incorrect**. The labor rate variance says nothing about production levels, either actual or budgeted.

**[31] Gleim #: 7.4.84 -- Source: CMA 0408 2-233**

MinnOil performs oil changes and other minor maintenance services (e.g., tire pressure checks) for cars. The company advertises that all services are completed within 15 minutes for each service. On a recent Saturday, 160 cars were serviced, resulting in the following labor variances: rate, \$19 unfavorable; efficiency, \$14 favorable. If MinnOil's standard labor rate is \$7 per hour, determine the actual wage rate per hour and the actual hours worked.

	<u>Wage Rate</u>	<u>Hours Worked</u>
A.	\$6.55	42.00
B.	\$6.67	42.71
C.	\$7.45	42.00
D.	\$7.50	38.00

- Answer (A) is **incorrect**. Forty-two hours results from reversing the sign of the efficiency variance, and \$6.55 results from reversing the sign of the rate variance.
- Answer (B) is **incorrect**. Treating the rate variance as if it were the efficiency variance and vice versa results in \$6.67 and 42.71.
- Answer (C) is **incorrect**. Forty-two hours results from reversing the sign of the efficiency variance.

- Answer (D) is **correct**. Since 160 cars were serviced and each car requires 1/4 of an hour to service, the “expected” quantity of hours, that is, the quantity that should have been expended given the achieved level of production, was 40 ( $160 \times .25$ ). The actual number of hours expended can be found by substituting in the formula for the efficiency variance:

$$\begin{aligned}(EQ - AQ) \times SP &= \text{Labor efficiency variance} \\ (40 - AQ) \times \$7.00 &= \$14 \text{ F} \\ 40 - AQ &= 2 \\ AQ &= 38\end{aligned}$$

Substituting again allows us to derive the actual wage rate paid:

$$\begin{aligned}AQ \times (SP - AP) &= \text{Labor rate variance} \\ 38 \times (\$7.00 - AP) &= \$19 \text{ U} \\ (\$7.00 - AP) &= .5 \\ AP &= \$7.50\end{aligned}$$

**[32] Gleim #: 7.4.85 -- Source: CMA 0408 2-237**

Lee Manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of May included the following information.

Direct labor (10,000 hrs. at \$15 per hr.)	\$150,000
Variable overhead	30,000
Fixed overhead	80,000

During May, 6,000 units were produced and the direct labor efficiency variance was \$1,500 unfavorable. Based on this information, the actual number of direct labor hours used in May was

- A. 9,900
- B. 10,100
- C. 11,900
- D. 12,100

- Answer (A) is **incorrect**. Using the static budget inputs for 5,000 units and reversing the sign of the variance results in 9,900 hours.

- Answer (B) is **incorrect**. Using the static budget inputs rather than the “expected” inputs results in 10,100 hours.
- Answer (C) is **incorrect**. Treating the labor efficiency variance as favorable results in 11,900 hours.
- Answer (D) is **correct**. The standard inputs per unit of output can be determined by dividing the budgeted total input hours (10,000) by the budgeted total output level (5,000), giving 2 hours of direct labor for every finished unit. Since the actual output level was 6,000, the “expected” quantity, or number of hours allowed given the achieved level of production, was 12,000 ( $6,000 \times 2$ ). These amounts can be substituted in the formula for the efficiency variance:

$$\begin{aligned}(EQ - AQ) \times SP &= \text{Labor efficiency variance} \\ (12,000 - AQ) \times \$15 &= \$1,500 \text{ U} \\ 12,000 - AQ &= 100 \\ AQ &= 12,100\end{aligned}$$

**[33] Gleim #: 7.4.86 -- Source: CMA 0408 2-239**

Randall Company uses standard costing and flexible budgeting and is evaluating its direct labor. The flexible budget variance can usually be broken down into two other variances identified as the

- A. Direct labor rate variance and direct labor efficiency variance.
  - B. Direct labor cost variance and direct labor volume variance.
  - C. Direct labor rate variance and direct labor volume variance.
  - D. Direct labor cost variance and direct labor efficiency variance.
- Answer (A) is **correct**. Any flexible budget variance for direct labor (or direct material) can be subdivided into two component variances, the rate (price) variance and the efficiency (quantity, usage) variance.
  - Answer (B) is **incorrect**. There is no recognized labor cost variance, and the labor volume variance is not a component of the flexible budget variance.
  - Answer (C) is **incorrect**. The labor volume variance is not a component of the flexible budget variance.
  - Answer (D) is **incorrect**. There is no recognized labor cost variance.

**[34] Gleim #: 7.4.87 -- Source: CMA 0408 2-242**

A company had a total labor variance of \$15,000 favorable and a labor efficiency variance of \$18,000 unfavorable. The labor price variance was

- A. \$3,000 favorable.
- B. \$3,000 unfavorable.
- C. \$33,000 favorable.
- D. \$33,000 unfavorable.

- Answer (A) is **incorrect**. Improperly reversing the sign of the efficiency variance results in \$3,000 favorable.
- Answer (B) is **incorrect**. Improperly netting the total labor variance and the labor efficiency variance results in \$3,000 favorable.
- Answer (C) is **correct**. The total variance for labor consists of a price (rate) variance and an efficiency (usage) variance. Since the total variance is \$15,000 favorable, the price variance must be \$33,000 unfavorable ( $-\$18,000 + \$33,000 = \$15,000$ ).
- Answer (D) is **incorrect**. Reversing the sign of the total labor variance results in \$33,000 unfavorable.

**[35] Gleim #: 7.4.88 -- Source: CMA 0408 2-252**

The accounting records of Foster Corporation reveal a favorable labor efficiency variance for the period just ended. Which of the following comments by Foster's executives reflect a limited knowledge of the variance investigation process?

1. "We can use statistical testing procedures to determine whether or not the variance should be investigated."
2. "Let's look into it. Yes, our operations might be fine; however, our standard labor time may need revision."
3. "I don't believe in all of these rules to decide whether or not variances should be investigated. Good judgment is the real key."
4. "Don't worry – the variance was caused by a random event and is well within our range of possible acceptable outcomes."
5. "Why are you getting so upset? This is a favorable variance, so let's forget it."

- A. 2 and 5 only.
- B. 1, 3, and 4 only.
- C. 4 and 5 only.
- D. 5 only.

- Answer (A) is **incorrect**. The impulse to investigate a variance with a view to revising a standard is a sound response.
- Answer (B) is **incorrect**. Statements 1, 3, and 4 reflect a sound understanding of variance analysis.
- Answer (C) is **incorrect**. The establishment of ranges of acceptable outcomes reflects a sound understanding of variance analysis.
- Answer (D) is **correct**. No variance by itself is either good or bad. Everything depends on context and what can be revealed by the component variances (if any) of a given variance. For example, a favorable direct materials variance may reflect unrealistically pessimistic standards for materials usage, while a favorable labor variance may reflect workers rushing the process and producing inferior goods.



[1] Gleim #: 7.5.89 -- Source: CMA 1295 3-8

The efficiency variance for either direct labor or materials can be divided into

- A. Spending variance and yield variance.
- B. Yield variance and price variance.
- C. Volume variance and mix variance.
- D. Yield variance and mix variance.

- Answer (A) is **incorrect**. A spending variance is not the same as an efficiency variance.
- Answer (B) is **incorrect**. A price variance is not the same as an efficiency variance.
- Answer (C) is **incorrect**. A volume variance is based on fixed costs, and an efficiency variance is based on variable costs.
- Answer (D) is **correct**. A direct labor or materials efficiency variance is calculated by multiplying the difference between standard and actual usage times the standard cost per unit of input. The efficiency variances can be divided into yield and mix variances. Mix and yield variances are calculated only when the production process involves combining several materials or classes of labor in varying proportions (when substitutions are allowable in combining resources).

[1] Gleim #: 7.6.100 -- Source: CMA 1289 4-6

If overhead is applied on the basis of units of output, the variable overhead efficiency variance will be

- A. Zero.
  - B. Favorable, if output exceeds the budgeted level.
  - C. Unfavorable, if output is less than the budgeted level.
  - D. A function of the direct labor efficiency variance.
- Answer (A) is **correct**. The variable overhead efficiency variance equals the product of the variable overhead application rate and the difference between the standard input for the actual output and the actual input. Hence, the variance will be zero if variable overhead is applied on the basis of units of output because the difference between actual and standard input cannot be recognized.
  - Answer (B) is **incorrect**. The variance will be zero.
  - Answer (C) is **incorrect**. The variance will be zero.
  - Answer (D) is **incorrect**. The correlation between the variable overhead and direct labor efficiency variances occurs only when overhead is applied on the basis of direct labor.

[2] Gleim #: 7.6.101 -- Source: CMA 1289 4-1

Variable overhead is applied on the basis of standard direct labor hours. If, for a given period, the direct labor efficiency variance is unfavorable, the variable overhead efficiency variance will be

- A. Favorable.
  - B. Unfavorable.
  - C. The same amount as the labor efficiency variance.
  - D. Indeterminable because it is not related to the labor efficiency variance.
- Answer (A) is **incorrect**. The efficiency variances are directly correlated.
  - Answer (B) is **correct**. The calculation of the variable overhead efficiency variance is similar to that of the direct labor efficiency variance in that both measure the effect of the difference between actual and standard hours. Assuming overhead is applied on the basis of direct labor hours, both variance calculations will be based on the same number of hours. Thus, if the direct labor efficiency variance is unfavorable, the variable overhead efficiency variance will also be unfavorable.

- Answer (C) is **incorrect**. The amount of the variance is dependent upon the actual costs incurred.
- Answer (D) is **incorrect**. The efficiency variances are directly correlated.

**[3] Gleim #: 7.6.102 -- Source: CMA 1295 3-4**

Variable overhead is applied on the basis of standard direct labor hours. If, for a given period, the direct labor efficiency variance is unfavorable, the variable overhead efficiency variance will be

- A. Favorable.
  - B. Unfavorable.
  - C. Zero.
  - D. The same amount as the direct labor efficiency variance.
- Answer (A) is **incorrect**. Both efficiency variances are based on the same number of hours worked. Thus, if one is unfavorable, the other will also be unfavorable.
  - Answer (B) is **correct**. If variable overhead is applied to production on the basis of direct labor hours, both the variable overhead efficiency variance and the direct labor efficiency variance will be calculated on the basis of the same number of hours. If the direct labor efficiency variance is unfavorable, the overhead efficiency variance will also be unfavorable because both variances are based on the difference between standard and actual direct labor hours worked.
  - Answer (C) is **incorrect**. Both efficiency variances are based on the same number of hours worked. Thus, if one is unfavorable, the other will also be unfavorable.
  - Answer (D) is **incorrect**. The amount of the variances will be different depending on the amount of the costs anticipated and actually paid.

**[4] Gleim #: 7.6.103 -- Source: CMA 0205 2-41**

Baltimore Products has an estimated practical capacity of 90,000 machine hours, and each unit requires two machine hours. The following data apply to a recent accounting period:

Actual variable overhead	\$240,000
Actual fixed overhead	\$442,000
Actual machine hours worked	88,000
Actual finished units produced	42,000
Budgeted variable overhead at 90,000 machine hours	\$200,000
Budgeted fixed overhead	\$450,000

Of the following factors, Baltimore's production volume variance is most likely to have been caused by

- A. A wage hike granted to a production supervisor.
  - B. A newly imposed initiative to reduce finished goods inventory levels.
  - C. Acceptance of an unexpected sales order.
  - D. Temporary employment of workers with lower skill levels than originally anticipated.
- 
- Answer (A) is **incorrect**. A wage hike to a production supervisor is a variable cost and would thus affect the variable, not the fixed, variance.
  - Answer (B) is **correct**. Fixed overhead was budgeted based on a practical capacity of 90,000 machine hours. Because the actual hours used were 88,000, fixed overhead was underapplied, and an unfavorable production-volume variance resulted. The only one of the four actions that would result in fewer machine hours than were budgeted being consumed is the initiative to reduce finished goods inventory levels.
  - Answer (C) is **incorrect**. An unexpected sales order would result in more machine hours than were budgeted, not fewer. In other words, an unexpected order would result in a variable volume variance.
  - Answer (D) is **incorrect**. Worker wages are a variable cost and would thus affect the variable, not the fixed, overhead variance.

[5] Gleim #: 7.6.104 -- Source: CMA 1279 4-10

The fixed overhead volume variance is the

- A. Measure of the lost profits from the lack of sales volume.
  - B. Amount of the underapplied or overapplied fixed overhead costs.
  - C. Potential cost reduction that can be achieved from better cost control.
  - D. Measure of production inefficiency.
- Answer (A) is **incorrect**. The fixed overhead volume variance concerns the application of fixed cost to product and does not encompass revenue or sales concepts in any way.
  - Answer (B) is **correct**. The fixed overhead volume variance is the difference between budgeted fixed costs and actual overhead applied, which equals the budgeted fixed overhead rate times the standard input allowed for the actual output. It is solely a measure of capacity usage and does not signify that fixed costs were more or less than budgeted.
  - Answer (C) is **incorrect**. The fixed overhead volume variance is calculated on the assumption that fixed costs are constant.
  - Answer (D) is **incorrect**. The volume variance concerns output levels rather than the efficiency of production.

[6] Gleim #: 7.6.105 -- Source: CMA 1273 4-13

Which of these variances is **least** significant for cost control?

- A. Labor price variance.
  - B. Materials quantity variance.
  - C. Fixed O/H volume variance.
  - D. Variable O/H spending variance.
- Answer (A) is **incorrect**. A labor price variance reflects a difference between the actual price of labor and the budgeted price of labor, which is useful information for cost control.
  - Answer (B) is **incorrect**. The materials quantity variance is the difference between budgeted and actual materials used during production. This is an important variance for cost control.

- Answer (C) is **correct**. The fixed O/H volume variance occurs when actual activity levels differ from anticipated levels. It is an excellent example of cost allocation as opposed to cost control. Unlike other variances, the volume variance does not directly reflect a difference between actual and budgeted expenditures. The economic substance of this variance lies in the costs or benefits of capacity usage or nonusage. For example, idle capacity results in the loss of the contribution margin from units not produced and sold.
- Answer (D) is **incorrect**. The difference between actual variable O/H and the product of the actual input and the budgeted variable O/H rate is useful information for cost control.

**[7] Gleim #: 7.6.106 -- Source: CMA 0205 2-42**

Lee Manufacturing uses a standard cost system with overhead applied based upon direct labor hours. The manufacturing budget for the production of 5,000 units for the month of May included the following information:

Direct labor (10,000 hours at \$15 per hour)	\$150,000
Variable overhead	30,000
Fixed overhead	80,000

During May, 6,000 units were produced and the fixed overhead budget variance was \$2,000 favorable. Fixed overhead during May was

- A. Underapplied by \$2,000.
- B. Underapplied by \$16,000.
- C. Overapplied by \$16,000.
- D. Overapplied by \$18,000.

- Answer (A) is **incorrect**. Misinterpreting the \$2,000 favorable budget (spending) variance results in \$2,000 underapplied.
- Answer (B) is **incorrect**. Reversing the proper order of subtraction results in \$16,000 underapplied.
- Answer (C) is **incorrect**. The production-volume variance is \$16,000 overapplied.

- Answer (D) is **correct**. First, the actual production level for the month was 6,000 units of output. Second, the standard number of labor hours consumed per unit of output is 2 (10,000 budgeted direct labor hours ÷ 5,000 budgeted units output). Third, since fixed overhead for the month was budgeted at \$80,000 and it is to be applied in proportion to 10,000 budgeted direct labor hours, the application rate is \$8 per direct labor hour (\$80,000 ÷ 10,000). Thus, the amount of fixed overhead applied for the month was \$96,000 = (6,000 × \$8 × 2). The fixed overhead budget variance was \$2,000 favorable, which means the actual fixed overhead incurred for the month was \$78,000 (\$80,000 – \$2,000). Thus, fixed overhead was overapplied by \$18,000 (\$96,000 – \$78,000).

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**[Fact Pattern #1]**

Tiny Tykes Corporation had the following activity relating to its fixed and variable overhead for the month of July:

Actual costs

Fixed overhead	\$120,000
Variable overhead	80,000

Flexible budget

(Standard input allowed for actual  
output achieved × budgeted rate)

Variable overhead	90,000
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Applied

(Standard input allowed for actual  
output achieved × budgeted rate)

Fixed overhead	125,000
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Variable overhead spending variance	2,000 F
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Production volume variance	5,000 U
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**[8] Gleim #: 7.6.107 -- Source: CMA 693 3-19**

(Refers to Fact Pattern #1)

If the budgeted rate for applying variable overhead was \$20 per direct labor hour, how efficient or inefficient was Tiny Tykes Corporation in terms of using direct labor hours as an activity base?

- A. 100 direct labor hours inefficient.
- B. 100 direct labor hours efficient.
- C. 400 direct labor hours inefficient.
- D. 400 direct labor hours efficient.

- Answer (A) is **incorrect**. The variances are favorable.
- Answer (B) is **incorrect**. The number of 100 direct labor hours are equivalent to the spending variance ( $100 \text{ hours} \times \$20 = \$2,000$ ).
- Answer (C) is **incorrect**. The variances are favorable.
- Answer (D) is **correct**. The variable overhead spending and efficiency variances are the components of the total variable overhead variance. Given that actual variable overhead was \$80,000 and the variable overhead based on the budgeted rate was \$90,000, the total variance is \$10,000 favorable. If the overhead spending variance is \$2,000 favorable, the efficiency variance must be \$8,000 favorable (\$10,000 total – \$2,000 spending). At a rate of \$20 per hour, this variance is equivalent to 400 direct labor hours ( $\$8,000 \div \$20$ ).

**[9] Gleim #: 7.6.108 -- Source: CMA 693 3-20**

(Refers to Fact Pattern #1)

Tiny Tykes' fixed overhead efficiency variance is

- A. \$3,000 favorable.
- B. \$3,000 unfavorable.
- C. \$5,000 favorable.
- D. Never a meaningful variance.

- Answer (A) is **incorrect**. Efficiency variances are applicable to variable costs.
- Answer (B) is **incorrect**. Efficiency variances are applicable to variable costs.
- Answer (C) is **incorrect**. Efficiency variances are applicable to variable costs.



- Answer (D) is **correct**. Variable overhead variances can be subdivided into spending and efficiency components. However, fixed overhead variances do not have an efficiency component because fixed costs, by definition, are not related to changing levels of output. Fixed overhead variances are typically subdivided into a budget (or fixed overhead spending) variance and a volume variance.

**[10] Gleim #: 7.6.109 -- Source: CMA 1295 3-7**

The variance in an absorption costing system that measures the departure from the denominator level of activity that was used to set the fixed overhead rate is the

- A. Spending variance.
- B. Efficiency variance.
- C. Production volume variance.
- D. Flexible budget variance.

- Answer (A) is **incorrect**. The fixed overhead spending variance is the difference between actual fixed costs and budgeted costs.
- Answer (B) is **incorrect**. The efficiency variance is applicable to variable overhead.
- Answer (C) is **correct**. A denominator level of activity must be used to establish the standard cost (application rate) for fixed overhead. The production volume variance is the difference between budgeted fixed costs and the standard cost per unit of input times the standard units of input allowed for the actual production.
- Answer (D) is **incorrect**. The flexible budget variance is the difference between actual and budgeted amounts in a flexible budget.

**[11] Gleim #: 7.6.110 -- Source: CMA 695 3-30**

The production volume variance is due to

- A. Inefficient or efficient use of direct labor hours.
  - B. Efficient or inefficient use of variable overhead.
  - C. Difference from the planned level of the base used for overhead allocation and the actual level achieved.
  - D. Excessive application of direct labor hours over the standard amounts for the output level actually achieved.
- Answer (A) is **incorrect**. The direct labor efficiency variance relates to inefficient or efficient use of direct labor hours.

- Answer (B) is **incorrect**. The variable overhead efficiency variance relates to efficient or inefficient use of variable overhead.
- Answer (C) is **correct**. The production volume variance (also called an idle capacity variance) is a component of the total overhead variance. It is the difference between budgeted fixed costs and the product of the standard fixed cost per unit of input times the standard units of input allowed for the actual output. Thus, the production volume variance equals under- or overapplied fixed overhead. This variance results when actual activity differs from the activity base used to calculate the fixed overhead application rate.
- Answer (D) is **incorrect**. The volume variance is related to overhead application, not direct labor.

**[12] Gleim #: 7.6.111 -- Source: CMA Sample Q3-1**

Coach Corporation is considering which capacity measure is appropriate to use as the denominator level of activity when applying fixed overhead to units produced. Assume that Coach selects direct labor hours as the cost driver and the following additional data are available from the prior year:

	<u>Hours</u>
Standard direct labor hours for normal capacity	200,000
Standard direct labor hours allowed for units produced in the prior year	210,000
Standard direct labor hours for the master budget capacity	220,000

Which of the following capacity measures for the denominator-level of activity would have resulted in an unfavorable volume variance?

- Both normal capacity and master budget capacity.
  - Neither normal capacity nor master budget capacity.
  - Normal capacity only.
  - Master budget capacity only.
- Answer (A) is **incorrect**. The standard input for the actual output exceeds normal capacity. Thus, use of normal capacity results in a favorable volume variance.
  - Answer (B) is **incorrect**. The standard input for the actual output exceeds normal capacity. Thus, use of normal capacity results in a favorable volume variance.
  - Answer (C) is **incorrect**. Use of master budget capacity results in an unfavorable variance.

- Answer (D) is **correct**. The volume (production volume or idle capacity) variance is the amount of under- or overapplied fixed overhead. It is the difference between budgeted fixed overhead and the amount applied based on a predetermined rate and the standard input allowed for actual output. It measures the use of capacity rather than specific cost outlays. The predetermined rate equals the budgeted overhead divided by a measure of capacity. Consequently, when the standard input allowed for actual output exceeds the budgeted capacity, fixed overhead is overapplied, and the volume variance is favorable. If the master budget capacity is the denominator value, the volume variance is unfavorable. Conversely, when the standard input allowed for actual output is less than the budgeted capacity, fixed overhead is underapplied, and the volume variance is unfavorable. If the normal capacity is the denominator value, the volume variance is favorable.

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**[Fact Pattern #2]**

Nanjones Company manufactures a line of products distributed nationally through wholesalers. Presented below are planned manufacturing data for the year and actual data for November of the current year. The company applies overhead based on planned machine hours using a predetermined annual rate.

	Planning Data			Data for
	Annual	November		November
Fixed overhead	\$1,200,000	\$100,000	Direct labor hours (actual)	4,200
Variable overhead	\$2,400,000	\$220,000	Direct labor hours (plan	4,000
Direct labor hours	48,000	4,000	based on output)	
Machine hours	240,000	22,000	Machine hours (actual)	21,600
			Machine hours (plan based	21,000
			on output)	
			Fixed overhead	\$101,200
			Variable overhead	\$214,000

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**[13] Gleim #: 7.6.112 -- Source: CMA 1292 3-15**

(Refers to Fact Pattern #2)

The predetermined overhead application rate for Nanjones Company is

- A. \$5.00
- B. \$25.00
- C. \$10.00
- D. \$15.00

- Answer (A) is **incorrect**. The fixed overhead application rate is \$5.
- Answer (B) is **incorrect**. The fixed overhead per labor hour is \$25.
- Answer (C) is **incorrect**. The variable portion of the overhead application rate is \$10.
- Answer (D) is **correct**. The predetermined overhead application rate is \$15  $[(\$1,200,000 \text{ FOH} + \$2,400,000 \text{ VOH}) \div 240,000 \text{ machine hours}]$ .

**[14] Gleim #: 7.6.113 -- Source: CMA 1292 3-16**

(Refers to Fact Pattern #2)

Nanjones' total amount of overhead applied to production for November was

- A. \$316,200
- B. \$315,000
- C. \$320,000
- D. \$300,000

- Answer (A) is **incorrect**. The total overhead applied was \$315,000 based on 21,000 hours at \$15 per hour.
- Answer (B) is **correct**. Overhead is applied on the basis of planned machine hours. The predetermined overhead application rate is \$15  $[(\$1,200,000 \text{ FOH} + \$2,400,000 \text{ VOH}) \div 240,000 \text{ machine hours}]$ . Thus, total overhead applied was \$315,000 (21,000 planned machine hours based on output  $\times$  \$15).
- Answer (C) is **incorrect**. The total overhead applied was \$315,000 based on 21,000 hours at \$15 per hour.
- Answer (D) is **incorrect**. The amount of \$300,000 is based on planned direct labor hours at \$75 per hour.

**[15] Gleim #: 7.6.114 -- Source: CMA 1292 3-17**

(Refers to Fact Pattern #2)

Nanjones' amount of over- or underapplied variable manufacturing overhead for November was

- A. \$6,000 overapplied.
- B. \$4,000 underapplied.
- C. \$20,000 overapplied.
- D. \$6,000 underapplied.

- Answer (A) is **incorrect**. The overhead was underapplied.
- Answer (B) is **correct**. Variable overhead applied in November was \$210,000 [21,000 planned machine hours based on output  $\times$  (\$2,400,000 planned annual VOH  $\div$  240,000 planned machine hours)]. Because the applied overhead was less than actual (\$214,000), underapplied variable overhead equaled \$4,000.
- Answer (C) is **incorrect**. The overhead was underapplied.
- Answer (D) is **incorrect**. The amount of \$6,000 is based on the 22,000 machine hours planned for November rather than the planned hours for actual output.

**[16] Gleim #: 7.6.115 -- Source: CMA 1292 3-18**

(Refers to Fact Pattern #2)

Nanjones' variable overhead spending variance for November was

- A. \$2,000 favorable.
  - B. \$6,000 favorable.
  - C. \$14,000 unfavorable.
  - D. \$6,000 unfavorable.
- Answer (A) is **correct**. The variable overhead spending variance equals the difference between actual variable overhead and the product of the actual input and the budgeted application rate. At a variable overhead application rate (standard cost) of \$10 per machine hour (\$2,400,000  $\div$  240,000 hours), the total standard cost for the 21,600 actual hours was \$216,000. Given actual costs of \$214,000, the favorable variance is \$2,000.
  - Answer (B) is **incorrect**. The amount of \$6,000 is based on planned machine hours of 22,000.
  - Answer (C) is **incorrect**. The variance is favorable.
  - Answer (D) is **incorrect**. The variance is favorable.

**[17] Gleim #: 7.6.116 -- Source: CMA 1292 3-19**

(Refers to Fact Pattern #2)

Nanjones' fixed overhead volume variance for November was

- A. \$1,200 unfavorable.
- B. \$5,000 unfavorable.
- C. \$10,000 favorable.
- D. \$5,000 favorable.

- Answer (A) is **incorrect**. The variance was favorable.
- Answer (B) is **incorrect**. The variance was favorable.
- Answer (C) is **incorrect**. The amount of \$10,000 is based on 22,000 planned machine hours.
- Answer (D) is **correct**. The fixed overhead volume (production volume or idle capacity) variance is the difference between budgeted fixed costs and the product of the standard fixed overhead cost per unit of input and the standard units of input allowed for the actual output. Budgeted fixed costs for the month were \$100,000. The standard cost of actual output was \$105,000 [21,000 machine hours planned for actual output  $\times$  (\$1,200,000 planned annual FOH  $\div$  240,000 planned annual machine hours) FOH application rate]. Hence, the fixed overhead volume variance was \$5,000 favorable. It was favorable because the budget for fixed overhead was less than the amount applied to jobs. An overapplication of fixed overhead suggests that output exceeded expectations.

**[18] Gleim #: 7.6.117 -- Source: CMA 693 3-26**

Which one of the following variances is of **least** significance from a behavioral control perspective?

- A. Unfavorable direct materials quantity variance amounting to 20% of the quantity allowed for the output attained.
  - B. Unfavorable direct labor efficiency variance amounting to 10% more than the budgeted hours for the output attained.
  - C. Favorable direct labor rate variance resulting from an inability to hire experienced workers to replace retiring workers.
  - D. Fixed overhead volume variance resulting from management's decision midway through the fiscal year to reduce its budgeted output by 20%.
- Answer (A) is **incorrect**. An unfavorable direct materials quantity variance affects production management and possibly the purchasing function. It may indicate an inefficient use of materials or the use of poor quality materials.
  - Answer (B) is **incorrect**. An unfavorable direct labor efficiency variance reflects upon production workers who have used too many hours.
  - Answer (C) is **incorrect**. A favorable direct labor rate variance related to hiring is a concern of the human resources function. The favorable rate variance might be more than offset by an unfavorable direct labor efficiency variance or a direct materials quantity variance (if waste occurred).

- Answer (D) is **correct**. Most variances are of significance to someone who is responsible for that variance. However, a fixed overhead volume variance is often not the responsibility of anyone other than top management. The fixed overhead volume variance equals the difference between budgeted fixed overhead and the amount applied (standard input allowed for the actual output  $\times$  standard rate). It can be caused by economic downturns, labor strife, bad weather, or a change in planned output. Thus, a fixed overhead volume variance resulting from a top management decision to reduce output has fewer behavioral implications than other variances.

**[19] Gleim #: 7.6.118 -- Source: CMA 1289 4-3**

A fixed overhead volume variance based on standard direct labor hours measures

- A. Deviation from standard direct labor hour capacity.
- B. Deviation from the normal, or denominator, level of direct labor hours.
- C. Fixed overhead efficiency.
- D. Fixed overhead use.

- Answer (A) is **incorrect**. The volume variance is not related to direct labor.
- Answer (B) is **correct**. The fixed overhead volume variance measures the effect of not operating at the budgeted (denominator) activity level. It is the difference between budgeted fixed costs and the product of the standard fixed overhead application rate and the standard activity level for the actual output. A favorable variance means that activity was greater than expected and that fixed overhead was overapplied. It might be caused by, for example, hiring more workers to provide an extra shift. An unfavorable volume variance means that activity was less than budgeted (overhead was underapplied), for example, because of insufficient sales or a labor strike. Accordingly, the volume variance is usually outside the control of production management. Moreover, unlike other variances, it does not directly reflect a difference between actual and budgeted expenditure of resources.
- Answer (C) is **incorrect**. The volume variance is not related to overhead efficiency.
- Answer (D) is **incorrect**. The volume variance is not related to overhead use.

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**[Fact Pattern #3]**

Franklin Glass Works' production budget for the year ended November 30 was based on 200,000 units. Each unit requires 2 standard hours of labor for completion. Total overhead was budgeted at \$900,000 for the year, and the fixed overhead rate was estimated to be \$3.00 per unit. Both fixed and variable overhead are assigned to the product on the basis of direct labor hours. The actual data for the year ended November 30 are presented as follows.

Actual production in units	198,000
Actual direct labor hours	440,000
Actual variable overhead	\$352,000
Actual fixed overhead	\$575,000

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**[20] Gleim #: 7.6.119 -- Source: CMA 1290 3-5**

(Refers to Fact Pattern #3)

The standard hours allowed for actual production for the year ended November 30 total

- A. 247,500
- B. 396,000
- C. 400,000
- D. 495,000

- Answer (A) is **incorrect**. Total standard hours allowed equal actual production multiplied times the standard hours allowed per unit.
- Answer (B) is **correct**. Two (2) standard hours are allowed for each unit of production. Given actual production of 198,000 units, total standard hours allowed equal 396,000 ( $2 \times 198,000$ ).
- Answer (C) is **incorrect**. The total standard hours allowed at a production level of 200,000 units is 400,000.
- Answer (D) is **incorrect**. Total standard hours allowed equal actual production multiplied times the standard hours allowed per unit.



**[21] Gleim #: 7.6.120 -- Source: CMA 1290 3-6**

(Refers to Fact Pattern #3)

Franklin's variable overhead efficiency variance for the year is

- A. \$33,000 unfavorable.
- B. \$35,520 favorable.
- C. \$66,000 unfavorable.
- D. \$33,000 favorable.

- Answer (A) is **correct**. The variable overhead efficiency variance equals the difference between actual and standard direct labor hours times the standard cost per hour. Fixed overhead was budgeted at \$600,000 ( $\$3 \times 200,000$  expected units). Thus, total variable overhead was estimated to be \$300,000 (\$900,000 total OH – \$600,000), and the variable overhead application rate was \$.75 per hour [ $\$300,000 \div (2 \text{ hours} \times 200,000 \text{ units})$ ]. Standard hours for actual production are 396,000 ( $198,000 \text{ units} \times 2$ ). Actual hours worked were 440,000. Hence, the variable overhead efficiency variance is \$33,000 [ $(440,000 \text{ actual hours} - 396,000 \text{ standard hours for actual output}) \times \$.75$ ]. The variance is unfavorable because actual hours exceed budgeted hours.
- Answer (B) is **incorrect**. The variable overhead efficiency variance is unfavorable because the actual hours exceed budgeted hours.
- Answer (C) is **incorrect**. The variable overhead efficiency variance of \$66,000 is calculated by incorrectly using a variable overhead application rate of \$1.50 per hour, which does not take into account that each unit of production requires 2 standard hours of labor for completion.
- Answer (D) is **incorrect**. The variable overhead efficiency variance is unfavorable because the actual hours exceed budgeted hours.

**[22] Gleim #: 7.6.121 -- Source: CMA 1290 3-7**

(Refers to Fact Pattern #3)

Franklin's variable overhead spending variance for the year is

- A. \$20,000 unfavorable.
- B. \$19,800 favorable.
- C. \$22,000 unfavorable.
- D. \$20,000 favorable.

- Answer (A) is **incorrect**. The variable overhead spending variance is the difference between the actual variable factory overhead and the product of the budgeted application rate and the actual activity level.

- Answer (B) is **incorrect**. The variable overhead spending variance is unfavorable because the actual cost was higher than the standard.
- Answer (C) is **correct**. Based on the 440,000 hours actually worked and the \$.75 per hour variable overhead rate, the total standard cost for variable overhead is \$330,000. The actual variable overhead totaled \$352,000. The \$22,000 variable overhead spending variance is unfavorable because the actual cost was higher than the standard.
- Answer (D) is **incorrect**. The variable overhead spending variance is unfavorable because the actual cost was higher than the standard.

**[23] Gleim #: 7.6.122 -- Source: CMA 1290 3-8**

(Refers to Fact Pattern #3)

Franklin's fixed overhead spending variance for the year is

- A. \$19,000 favorable.
- B. \$25,000 favorable.
- C. \$5,750 favorable.
- D. \$25,000 unfavorable.

- Answer (A) is **incorrect**. The fixed overhead spending variance is calculated based on budgeted fixed overhead.
- Answer (B) is **correct**. Actual fixed overhead was \$575,000. Budgeted fixed overhead was \$3 per unit at an estimated production of 200,000 units; a total of \$600,000. The difference of \$25,000 is a favorable variance because the actual amount was less than that budgeted.
- Answer (C) is **incorrect**. The fixed overhead spending variance is the difference between the actual fixed factory overhead and the amount budgeted.
- Answer (D) is **incorrect**. The fixed overhead spending variance is favorable since the actual amount was less than budgeted.

**[24] Gleim #: 7.6.123 -- Source: CMA 1290 3-9**

(Refers to Fact Pattern #3)

The fixed overhead applied to Franklin's production for the year is

- A. \$484,200
- B. \$575,000
- C. \$594,000
- D. \$600,000

- Answer (A) is **incorrect**. The fixed overhead applied equals the budgeted fixed overhead rate multiplied times the actual units of production.
- Answer (B) is **incorrect**. The actual fixed overhead for the year is \$575,000.
- Answer (C) is **correct**. Fixed overhead is applied at the rate of \$3 per unit. The amount applied given actual production is \$594,000 ( $\$3 \times 198,000$  units).
- Answer (D) is **incorrect**. The budgeted fixed overhead at an estimated production of 200,000 units is \$600,000.

**[25] Gleim #: 7.6.124 -- Source: CMA 1290 3-10**

(Refers to Fact Pattern #3)

Franklin's fixed overhead volume variance for the year is

- A. \$6,000 unfavorable.
  - B. \$19,000 favorable.
  - C. \$25,000 favorable.
  - D. \$55,000 unfavorable.
- Answer (A) is **correct**. The fixed overhead volume variance results when production varies from the denominator amount. The denominator amount is the level of production used to determine the standard cost per unit. Because production was expected to be 200,000 units (the denominator level), but actual production was only 198,000 units, an unfavorable volume variance of 2,000 units occurred. Thus, 2,000 units were not charged with \$3 per unit of overhead, and the volume variance in dollars was \$6,000U ( $2,000 \text{ units} \times \$3$ ). This underapplication of fixed overhead is unfavorable because it indicates an underuse of facilities; that is, activity was less than budgeted. Unlike other variances, this variance does not measure deviations from expected costs but rather the departure from the expected use of productive capacity.
  - Answer (B) is **incorrect**. The fixed overhead volume variance is unfavorable because actual activity is less than budgeted.
  - Answer (C) is **incorrect**. The fixed overhead volume variance is unfavorable because actual activity is less than budgeted.
  - Answer (D) is **incorrect**. The fixed overhead volume variance equals the difference between the budgeted fixed factory overhead and the product of the budgeted application rate and the standard input allowed for the actual output.

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**[Fact Pattern #4]**

Dori Castings, a job-order shop, uses a full-absorption, standard-cost system to account for its production costs. The O/H costs are applied on a direct-labor-hour basis.

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**[26] Gleim #: 7.6.125 -- Source: CMA 1284 4-1**

(Refers to Fact Pattern #4)

Dori's choice of a production volume as a denominator for calculating its factory O/H rate has

- A. An effect on the variable factory O/H rate for applying costs to production.
  - B. No effect on the fixed factory O/H budget variance.
  - C. No effect on the fixed factory O/H production volume variance.
  - D. No effect on the overall (net) fixed factory O/H variance.
- Answer (A) is **incorrect**. By definition, the total variable factory O/H varies with the activity level, but total fixed O/H and unit variable O/H do not.
  - Answer (B) is **correct**. The use of a production volume as the denominator in calculating the factory O/H rate has no effect on the fixed factory O/H budget variance. This variance is the difference between actual fixed costs and budgeted (lump sum) fixed costs.
  - Answer (C) is **incorrect**. The fixed factory O/H production volume variance is the difference between budgeted fixed O/H and fixed O/H applied based on the predetermined rate.
  - Answer (D) is **incorrect**. The overall (net) fixed factory O/H variance is the difference between the actual fixed O/H and the fixed O/H applied based on the predetermined rate.

**[27] Gleim #: 7.6.126 -- Source: CMA 1284 4-2**

(Refers to Fact Pattern #4)

A production volume variance will exist for Dori in a month when

- A. Production volume differs from sales volume.
  - B. Actual direct labor hours differ from standard allowed direct labor hours.
  - C. The fixed factory O/H applied on the basis of standard allowed direct labor hours differs from actual fixed factory O/H.
  - D. The fixed factory O/H applied on the basis of standard allowed direct labor hours differs from the budgeted fixed factory O/H.
- Answer (A) is **incorrect**. Sales volume is irrelevant.

- Answer (B) is **incorrect**. The difference between actual direct labor hours and standard direct labor hours allowed is the basis of the variable O/H efficiency variance.
- Answer (C) is **incorrect**. The difference between fixed factory O/H applied on the basis of standard allowed direct labor hours and the budgeted fixed factory O/H defines the total fixed O/H variance.
- Answer (D) is **correct**. A fixed O/H production volume variance is the difference between the budgeted fixed factory O/H and the O/H applied based on a predetermined rate and standard direct labor hours allowed for the actual output.

**[28] Gleim #: 7.6.127 -- Source: CMA 1284 4-4**

(Refers to Fact Pattern #4)

The amount of fixed factory O/H that Dori will apply to finished production is the

- A. Actual direct labor hours times the standard fixed factory O/H rate per direct labor hour.
  - B. Standard allowed direct labor hours for the actual units of finished output times the standard fixed factory O/H rate per direct labor hour.
  - C. Standard units of output for the actual direct labor hours worked times the standard fixed factory O/H rate per unit of output.
  - D. Actual fixed factory O/H cost per direct labor hour times the standard allowed direct labor hours.
- Answer (A) is **incorrect**. The standard hours allowed for the actual units of finished output is used, not the AH.
  - Answer (B) is **correct**. Fixed factory O/H in a standard costing system is applied to the product based on the predetermined O/H rate multiplied by the standard hours allowed for the actual output. Thus, the applied fixed factory O/H is limited to the standard amount.
  - Answer (C) is **incorrect**. The O/H application is not based on units of production for the AH.
  - Answer (D) is **incorrect**. The applied fixed factory O/H is limited to the standard amount determined using the standard O/H rate per DL hour, not the actual O/H cost per DL hour.

**[29] Gleim #: 7.6.128 -- Source: CMA 687 4-17**

Selo Imports uses flexible budgeting for the control of costs. The company's annual master budget includes \$324,000 for fixed production supervisory salaries at a volume of 180,000 units. Supervisory salaries are expected to be incurred uniformly through the year. During September, 15,750 units were produced and production supervisory salaries incurred were \$28,000. A performance report for September should reflect a budget variance of

- A. \$350 Favorable.
- B. \$350 Unfavorable.
- C. \$1,000 Unfavorable.
- D. \$1,000 Favorable.

- Answer (A) is **incorrect**. Supervisor salaries are expected to be incurred uniformly through the year; thus, supervisor salaries are based on time, not units produced.
- Answer (B) is **incorrect**. Supervisor salaries are expected to be incurred uniformly through the year; thus, supervisor salaries are based on time, not units produced.
- Answer (C) is **correct**. The budget (spending) variance for fixed O/H equals actual minus budgeted fixed O/H. The \$324,000 cost of supervisory salaries is fixed and is incurred at \$27,000 per month. Thus, the variance is the difference between actual costs of \$28,000 and the budgeted costs of \$27,000, or \$1,000 unfavorable.
- Answer (D) is **incorrect**. The actual O/H (\$28,000) was greater than the budgeted O/H ( $\$324,000 \div 12 \text{ months} = \$27,000$ ); therefore, the variance is unfavorable.

**[48] Gleim #: 7.6.147 -- Source: CMA 0408 2-212**

A company applies variable overhead based upon direct labor hours and has a variable overhead efficiency variance that is \$25,000 favorable. A possible cause of this variance is that

- A. Higher skilled labor was used.
  - B. Electricity rates were lower than expected.
  - C. Fewer supplies were used than anticipated.
  - D. Fewer units of finished goods were produced.
- Answer (A) is **correct**. When direct labor hours are the allocation base for variable overhead, an efficiency in the use of direct labor hours will naturally result in a favorable variable overhead efficiency variance. Among the items listed, highly skilled workers would be the most likely cause of a favorable direct labor efficiency variance.

- Answer (B) is **incorrect**. Electric rates do not affect labor efficiency, which is the driver for variable overhead. Also, actual costs that were lower than expected would lead to a favorable rate or spending variance, not an efficiency variance.
- Answer (C) is **incorrect**. Using fewer indirect materials does not affect the variable overhead efficiency variance when labor hours are the allocation base.
- Answer (D) is **incorrect**. The level of output does not affect the variable overhead.

**[49] Gleim #: 7.6.148 -- Source: CMA 0408 2-240**

Brannen Videotronics uses a four-way allocation of overhead, machine hours to allocate overhead, and years of experience as the main determinant for wage increases. The standards are set and revised on an annual basis. Due to a surge in competitive pressures, Brannen's management decided to undertake downsizing. Brannen offered incentives that permitted a large number of senior employees to opt in the middle of the year for early retirement. As a result, Brannen had to bring in temporary replacements who were paid entry-level wages to see that work deadlines were met. Which one of the following is most likely to result from this situation?

- A. Unfavorable efficiency variances and favorable price variances.
  - B. Unfavorable efficiency variances and unfavorable price variances.
  - C. Favorable efficiency variances and unfavorable price variances.
  - D. Favorable efficiency variances and favorable price variances.
- Answer (A) is **correct**. The use of less-skilled workers will generally result in unfavorable labor efficiency variances. However, this is accompanied by favorable labor rate (or price) variances, which result from paying lower wages.
  - Answer (B) is **incorrect**. Favorable price variances will generally result.
  - Answer (C) is **incorrect**. Unfavorable efficiency variances and favorable price variances will generally result.
  - Answer (D) is **incorrect**. Unfavorable efficiency variances will generally result.

[50] Gleim #: 7.6.149 -- Source: CMA 0408 2-243

Honolee Manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of June included 10,000 hours of direct labor at \$15 per hour, or \$150,000. During June, 4,500 units were produced, using 9,600 direct labor hours, incurring \$39,360 of variable overhead, and showing a variable overhead efficiency variance of \$2,400 unfavorable. The standard variable overhead rate per direct labor hour was

- A. \$3.85
- B. \$4.00
- C. \$4.10
- D. \$6.00

- Answer (A) is **incorrect**. Using \$2,400 U as the rate variance rather than as the efficiency variance results in \$3.85.
- Answer (B) is **correct**. Since 10,000 hours were budgeted to complete 5,000 units, the standard number of hours required for each unit of output is 2 (10,000 hours ÷ 5,000 units). Since 4,500 units were actually produced, the “expected” number of hours, that is, the number that should have been consumed given the achieved level of production, was 9,000 (4,500 units × 2 hours per unit). The actual number of labor hours expended during the month was 9,600, and the efficiency variance is given as \$2,400 U. Plugging these amounts into the formula for the efficiency variance allows us to derive the standard variable overhead rate:

$$\begin{aligned}(EQ - AQ) \times SP &= \text{Variable overhead efficiency variance} \\ (9,000 - 9,600) \times SP &= \$2,400 \text{ U} \\ SP &= \$4.00 \text{ per hour}\end{aligned}$$

- Answer (C) is **incorrect**. The actual rate applied is \$4.10.
- Answer (D) is **incorrect**. Using 10,000 hours instead of 9,000 hours as the standard hours results in \$6.00.



**[51] Gleim #: 7.6.150 -- Source: CMA 0408 2-244**

Cordell Company uses a standard cost system. On January 1 of the current year, Cordell budgeted fixed manufacturing overhead cost of \$600,000 and production at 200,000 units. During the year, the firm produced 190,000 units and incurred fixed manufacturing overhead of \$595,000. The production volume variance for the year was

- A. \$5,000 unfavorable.
- B. \$10,000 unfavorable.
- C. \$25,000 unfavorable.
- D. \$30,000 unfavorable.

- Answer (A) is **incorrect**. Attempting to combine the two elements of fixed overhead and reversing the sign results in \$5,000 unfavorable.
- Answer (B) is **incorrect**. The difference in the budgeted and actual number of units produced results in \$10,000 unfavorable.
- Answer (C) is **incorrect**. The spending variance is \$25,000 unfavorable.
- Answer (D) is **correct**. The application rate for fixed overhead is \$3.00 per unit (\$600,000 budgeted cost ÷ 200,000 budgeted units). The actual amount applied was \$570,000 (190,000 actual units × \$3.00 application rate). The production volume variance was thus \$30,000 unfavorable (\$570,000 – \$600,000).

**[52] Gleim #: 7.6.151 -- Source: CMA 0408 2-245**

Highlight, Inc. uses a standard cost system and applies factory overhead to products on the basis of direct labor hours. If the firm recently reported a favorable direct labor efficiency variance, then the

- A. Variable overhead spending variance must be favorable.
- B. Variable overhead efficiency variance must be favorable.
- C. Fixed overhead volume variance must be unfavorable.
- D. Direct labor rate variance must be unfavorable.

- Answer (A) is **incorrect**. Nothing can be concluded about the variable overhead efficiency variance from the information given.
- Answer (B) is **correct**. Highlight uses direct labor hours as the driver for variable overhead application. Thus, if the direct labor efficiency variance was favorable, the variable overhead efficiency variance must be favorable as well since the two variances are based on the same standard and actual hours.

- Answer (C) is **incorrect**. Nothing can be concluded about the fixed overhead volume variance from the information given.
- Answer (D) is **incorrect**. Nothing can be concluded about the direct labor rate variance from the information given.

**[53] Gleim #: 7.6.152 -- Source: CMA 0408 2-246**

Harper Company's performance report indicated the following information for the past month.

Actual total overhead	\$1,600,000
Budgeted fixed overhead	1,500,000
Applied fixed overhead at \$3 per labor hour	1,200,000
Applied variable overhead at \$.50 per labor hour	200,000
Actual labor hours	430,000

Harper's total overhead spending variance for the month was

- A. \$100,000 favorable.
- B. \$115,000 favorable.
- C. \$185,000 unfavorable.
- D. \$200,000 unfavorable.

- Answer (A) is **incorrect**. The total budget variance is \$100,000.
- Answer (B) is **correct**. The total overhead applied was \$1,400,000 (\$1,200,000 fixed plus \$200,000 variable). Since actual overhead was \$1,600,000, the total overhead variance was \$200,000 unfavorable. The \$200,000 total variance would be explained by three elements: the fixed overhead volume variance, the variable overhead efficiency variance, and the total spending variance. At \$3 per hour, fixed overhead was applied on the basis of 400,000 hours, but since the budget called for 500,000 hours, there was an unfavorable volume variance of 100,000 hours at \$3, or \$300,000. The variable overhead efficiency variance is calculated by multiplying the excess hours of 30,000 (430,000 – 400,000) times the variable application rate of \$.50, or \$15,000 unfavorable. Therefore, when you combine the \$300,000 unfavorable volume variance and the \$15,000 unfavorable efficiency variance, you get \$315,000 unfavorable. Since the total variance was only \$200,000 unfavorable, the spending variance must be favorable in the amount of \$115,000. Algebraically, this is solved as  $\$300,000 \text{ U} + \$15,000 \text{ U} - \text{SV} = \$200,000 \text{ U}$ . Thus  $\text{SV} = \$115,000 \text{ F}$ .
- Answer (C) is **incorrect**. The result of reversing the sign of the efficiency variance is \$185,000.

- Answer (D) is **incorrect**. The total overhead variance is \$200,000.

**[54] Gleim #: 7.6.153 -- Source: CMA 0408 2-247**

The JoyT Company manufactures Maxi Dolls for sale in toy stores. In planning for this year, JoyT estimated variable factory overhead of \$600,000 and fixed factory overhead of \$400,000. JoyT uses a standard costing system, and factory overhead is allocated to units produced on the basis of standard direct labor hours. The denominator level of activity budgeted for this year was 10,000 direct labor hours, and JoyT used 10,300 actual direct labor hours.

Based on the output accomplished during this year, 9,900 standard direct labor hours should have been used. Actual variable factory overhead was \$596,000, and actual fixed factory overhead was \$410,000 for the year. Based on this information, the variable overhead spending variance for JoyT for this year was

- A. \$24,000 unfavorable.
- B. \$2,000 unfavorable.
- C. \$4,000 favorable.
- D. \$22,000 favorable.

- Answer (A) is **incorrect**. The efficiency variance is \$24,000 unfavorable.
- Answer (B) is **incorrect**. The flexible budget variance is \$2,000 unfavorable.
- Answer (C) is **incorrect**. The static budget variance is \$4,000 favorable.
- Answer (D) is **correct**. The standard application rate for variable overhead is \$60.00 per direct labor hour (\$600,000 budgeted ÷ 10,000 budgeted direct labor hours). The variable overhead spending variance can thus be derived by using the following formula:

$$\begin{aligned}\text{Variable overhead efficiency} &= (\text{AQ} \times \text{SP}) - \text{Actual costs incurred} \\ \text{variance} &= (10,300 \times \$60.00) - \$596,000 \\ &= \$22,000 \text{ F}\end{aligned}$$

**[55] Gleim #: 7.6.154 -- Source: CMA 0408 2-248**

A company has a fixed overhead volume variance that is \$10,000 unfavorable. The most likely cause for this variance is that

- A. The production supervisory salaries were greater than planned.
  - B. The production supervisory salaries were less than planned.
  - C. More was produced than planned.
  - D. Less was produced than planned.
- Answer (A) is **incorrect**. The volume variance is not influenced by actual costs incurred.
  - Answer (B) is **incorrect**. The volume variance is not influenced by actual costs incurred.
  - Answer (C) is **incorrect**. An unfavorable fixed overhead volume variance would be caused by lower-than-planned production.
  - Answer (D) is **correct**. When production is lower than planned, fixed overhead costs are spread among fewer units of output than were planned for, generating an unfavorable volume variance.

**[56] Gleim #: 7.6.155 -- Source: CMA 0408 2-249**

When using a flexible budgeting system, the computation for the variable overhead spending variance is the difference between

- A. Actual variable overhead and the previously budgeted amount.
  - B. The previously budgeted amount and actual inputs times the budgeted rate.
  - C. The amount applied to work-in-process and actual variable overhead.
  - D. Actual variable overhead and actual inputs times the budgeted rate.
- Answer (A) is **incorrect**. The difference between the actual variable overhead and the previously budgeted amount is the static budget variance.
  - Answer (B) is **incorrect**. The difference between the previously budgeted amount and actual inputs times the budgeted rate is not a defined variance.
  - Answer (C) is **incorrect**. The difference between the amount applied to work-in-process and actual variable overhead is the flexible budget variance.
  - Answer (D) is **correct**. The variable overhead spending variance can be derived by using the following formula:

$$(AQ \times SP) - \text{Actual costs incurred}$$

[57] Gleim #: 7.6.156 -- Source: CMA 0408 2-254

Howard Company produces and sells replacement parts for cotton processing equipment. Which one of the following cost variances are **least** likely to be controllable by Howard's production manager?

- A. Variable overhead spending variance.
- B. Labor efficiency variance.
- C. Materials quantity variance.
- D. Fixed overhead production volume variance.

- Answer (A) is **incorrect**. The variable overhead spending variance is due to factors within the control of the production manager.
- Answer (B) is **incorrect**. The labor efficiency variance is due to factors within the control of the production manager.
- Answer (C) is **incorrect**. The materials quantity variance is due to factors within the control of the production manager.
- Answer (D) is **correct**. The fixed overhead production volume variance is the difference between the static/flexible budget for fixed overhead and the amount allocated based on the budgeted allocation rate and the driver level allowable for the actual production level achieved. None of these factors are under the control of the production manager.

**[Fact Pattern #1]**

Ardmore Enterprises uses a standard cost system in its small appliance division. The standard cost of manufacturing one unit of Zeb is as follows:

Direct materials -- 60 pounds at \$1.50 per pound	\$ 90
Direct labor -- 3 hours at \$12 per hour	36
Overhead -- 3 hours at \$8 per hour	<u>24</u>
Total standard cost per unit	<u><u>\$150</u></u>

The budgeted variable overhead rate is \$3 per direct labor hour, and the budgeted fixed overhead is \$27,000 per month. During May, Ardmore produced 1,650 units of Zeb compared with a normal capacity of 1,800 units. The actual cost per unit was as follows:

Direct materials (purchased and used) -- 58 pounds at \$1.65 per pound	\$ 95.70
Direct labor -- 3.1 hours at \$12 per hour	37.20
Overhead -- \$39,930 per 1,650 units	24.20
Total actual cost per unit	<u><u>\$157.10</u></u>

**[1] Gleim #: 7.7.157 -- Source: CMA 696 3-22**

(Refers to Fact Pattern #1)

Ardmore's total direct materials quantity variance for May is

- A. \$14,355 favorable.
- B. \$14,355 unfavorable.
- C. \$4,950 favorable.
- D. \$4,950 unfavorable.

- Answer (A) is **incorrect**. The amount of the direct materials price variance is \$14,355.
- Answer (B) is **incorrect**. The amount of the direct materials price variance is \$14,355.
- Answer (C) is **correct**. The direct materials quantity variance equals the difference between the standard and actual quantities times the standard price. Hence, the favorable direct materials quantity variance is \$4,950  $[1,650 \text{ units} \times (60 \text{ standard pounds} - 58 \text{ actual pounds}) \times \$1.50 \text{ standard}]$ .
- Answer (D) is **incorrect**. A favorable variance exists. The standard amount for the actual output exceeded the actual amount.

[2] Gleim #: 7.7.158 -- Source: CMA 696 3-23

(Refers to Fact Pattern #1)

Ardmore's direct materials price variance for May is

- A. \$14,355 unfavorable.
- B. \$14,850 unfavorable.
- C. \$14,355 favorable.
- D. \$14,850 favorable.

- Answer (A) is **correct**. The direct materials price variance equals the actual quantity used times the difference between the standard and actual price per unit. Thus, the unfavorable direct materials price variance is \$14,355 [1,650 units  $\times$  58 actual pounds  $\times$  (\$1.50 standard price – \$1.65 actual price)].
- Answer (B) is **incorrect**. The variance of \$14,850 is based on the standard unit quantity, not the actual quantity.
- Answer (C) is **incorrect**. The price variance is unfavorable. The actual price is greater than the standard price.
- Answer (D) is **incorrect**. The variance of \$14,850 is based on the standard unit quantity, not the actual quantity.

[3] Gleim #: 7.7.159 -- Source: CMA 696 3-1

(Refers to Fact Pattern #1)

Ardmore's direct labor rate variance for May is

- A. \$1,920 favorable.
- B. \$0
- C. \$4,950 unfavorable.
- D. \$4,950 favorable.

- Answer (A) is **incorrect**. The amount of the flexible budget overhead variance is \$1,920.
- Answer (B) is **correct**. The direct labor rate variance equals the actual hours used times the difference between the standard and actual rates. Consequently, the direct labor rate variance is zero [1,650 units  $\times$  3.1 actual hours  $\times$  (\$12 per hour standard rate – \$12 per hour actual rate)].
- Answer (C) is **incorrect**. The amount of the direct materials quantity variance is \$4,950.
- Answer (D) is **incorrect**. The amount of the direct materials quantity variance is \$4,950.

[4] Gleim #: 7.7.160 -- Source: CMA 696 3-25

(Refers to Fact Pattern #1)

Ardmore's flexible budget overhead variance for May is

- A. \$3,270 unfavorable.
- B. \$3,270 favorable.
- C. \$1,920 unfavorable.
- D. \$1,920 favorable.

- Answer (A) is **incorrect**. The flexible budget amount for an output of 1,800 units is \$3,270.
- Answer (B) is **incorrect**. The flexible budget amount for an output of 1,800 units is \$3,270.
- Answer (C) is **incorrect**. A favorable variance exists. Actual overhead is less than the standard overhead at the actual production level.
- Answer (D) is **correct**. The flexible budget overhead variance is the difference between actual overhead costs and the flexible budget amount for the actual output. Standard total fixed costs at any level of production are \$27,000. Standard variable overhead is \$9 per unit (3 labor hours  $\times$  \$3). Thus, total standard variable overhead is \$14,850 for the actual output (1,650 units  $\times$  \$9), and the total flexible budget amount is \$41,850 (\$27,000 FOH + \$14,850 VOH). Accordingly, the favorable flexible budget variance is \$1,920 favorable (\$41,850 flexible budget amount – \$39,930 actual amount).



**[Fact Pattern #2]**

Water Control Systems manufactures water pumps and uses a standard cost system. The standard overhead costs per water pump are based on direct labor hours and are as follows:

Variable overhead (4 hours at \$8 per hour)	\$32
Fixed overhead (4 hours at \$5* per hour)	20
Total overhead cost per unit	<u>\$52</u>

\* Based on a capacity of 100,000 direct labor hours per month.

The following information is available for the month of November:

- 22,000 pumps were produced although 25,000 had been scheduled for production.
- 94,000 direct labor hours were worked at a total cost of \$940,000.
- The standard direct labor rate is \$9 per hour.
- The standard direct labor time per unit is four hours.
- Variable overhead costs were \$740,000.
- Fixed overhead costs were \$540,000.

**[5] Gleim #: 7.7.161 -- Source: CMA 1294 3-26**

(Refers to Fact Pattern #2)

Water Control's fixed overhead spending variance for November was

- A. \$40,000 unfavorable.
  - B. \$70,000 unfavorable.
  - C. \$460,000 unfavorable.
  - D. \$240,000 unfavorable.
- Answer (A) is **correct**. The fixed overhead spending (budget) variance is the difference between budgeted and actual fixed overhead. Actual fixed overhead was \$540,000. Budgeted fixed overhead was \$5 per hour based on a capacity of 100,000 direct labor hours per month, or \$500,000. Because these costs are fixed, the budgeted fixed overhead is the same at any level of production. Hence, the variance is \$40,000 unfavorable (\$500,000 – \$540,000).
  - Answer (B) is **incorrect**. The difference between actual fixed overhead and the product of the standard rate and the actual direct labor hours is \$70,000 unfavorable.
  - Answer (C) is **incorrect**. The volume variance is \$460,000 unfavorable.
  - Answer (D) is **incorrect**. The difference between actual variable overhead and budgeted fixed overhead is \$240,000 unfavorable.

[6] Gleim #: 7.7.162 -- Source: CMA 1294 3-27

(Refers to Fact Pattern #2)

Water Control's variable overhead spending variance for November was

- A. \$60,000 favorable.
- B. \$12,000 favorable.
- C. \$48,000 unfavorable.
- D. \$40,000 unfavorable.

- Answer (A) is **incorrect**. The variance of \$60,000 favorable is based on 100,000 hours, not the actual hours of 94,000.
- Answer (B) is **correct**. The variable overhead spending variance is the difference between actual variable overhead and the variable overhead based on the standard rate and the actual activity level. Thus, the variable overhead spending variance was \$12,000 favorable  $[(94,000 \text{ actual hours} \times \$8 \text{ standard rate}) - \$740,000 \text{ actual cost}]$ .
- Answer (C) is **incorrect**. The variable overhead efficiency variance is \$48,000 unfavorable.
- Answer (D) is **incorrect**. The fixed overhead spending variance is \$40,000 unfavorable.

[7] Gleim #: 7.7.163 -- Source: CMA 1294 3-29

(Refers to Fact Pattern #2)

Water Control's direct labor price variance for November was

- A. \$54,000 unfavorable.
- B. \$94,000 unfavorable.
- C. \$60,000 favorable.
- D. \$148,000 unfavorable.

- Answer (A) is **incorrect**. The direct labor efficiency variance is \$54,000 unfavorable.
- Answer (B) is **correct**. The direct labor price variance equals actual labor hours times the difference between standard and actual labor rates. The actual direct labor cost was \$940,000 for 94,000 hours, or \$10 per hour. The standard rate was \$9 per hour. Thus, the variance is \$94,000 unfavorable  $[94,000 \text{ hours} \times (\$9 - \$10)]$ .
- Answer (C) is **incorrect**. The actual rate times the difference between capacity and actual hours equals \$60,000 favorable.
- Answer (D) is **incorrect**. The total direct labor variance is \$148,000 unfavorable.

**[8] Gleim #: 7.7.164 -- Source: CMA 1294 3-28**

(Refers to Fact Pattern #2)

Water Control's variable overhead efficiency variance for November was

- A. \$48,000 unfavorable.
- B. \$60,000 favorable.
- C. \$96,000 unfavorable.
- D. \$200,000 unfavorable.

- Answer (A) is **correct**. The variable overhead efficiency variance equals the standard price (\$8 an hour) times the difference between the actual hours and the standard hours allowed for the actual output. Thus, the variance is \$48,000 unfavorable  $\{[(22,000 \text{ units produced} \times 4 \text{ standard hours per unit}) - 94,000 \text{ actual hours}] \times \$8\}$ .
- Answer (B) is **incorrect**. The variable overhead spending variance calculated based on capacity, not actual hours, is \$60,000 favorable.
- Answer (C) is **incorrect**. The variance of \$96,000 unfavorable is based on the difference between standard hours allowed for the actual output and capacity hours.
- Answer (D) is **incorrect**. The excess of actual direct labor costs over actual variable overhead costs is \$200,000 unfavorable.

**[9] Gleim #: 7.7.165 -- Source: CMA 1294 3-30**

(Refers to Fact Pattern #2)

Water Control's direct labor efficiency variance for November was

- A. \$108,000 favorable.
- B. \$120,000 favorable.
- C. \$60,000 favorable.
- D. \$54,000 unfavorable.

- Answer (A) is **incorrect**. The variance of \$108,000 favorable is based on the difference between standard and capacity hours.
- Answer (B) is **incorrect**. The variance of \$120,000 favorable is based on the actual rate and the difference between standard hours and capacity.
- Answer (C) is **incorrect**. The variance of \$60,000 favorable is based on the actual rate and the difference between actual hours and capacity.

- Answer (D) is **correct**. The direct labor efficiency variance equals the difference between standard and actual hours times the standard rate. Hence, the variance is \$54,000 unfavorable  $\{[(22,000 \text{ units} \times 4 \text{ standard hours per unit}) - 94,000 \text{ hours}] \times \$9\}$ . The variance is unfavorable because the actual hours exceeded the standard hours.

**[14] Gleim #: 7.7.170 -- Source: CMA 0408 2-207**

Of the following pairs of variances found in a flexible budget report, which pair is most likely to be related?

- A. Material price variance and variable overhead efficiency variance.
- B. Labor rate variance and variable overhead efficiency variance.
- C. Material usage variance and labor efficiency variance.
- D. Labor efficiency variance and fixed overhead volume variance.

- Answer (A) is **incorrect**. The actual price charged by suppliers for raw materials and the actual number of allocation-base units expended are unrelated.
- Answer (B) is **incorrect**. The actual wage rates paid to workers and the actual number of allocation-base units expended are unrelated.
- Answer (C) is **correct**. Material usage and labor efficiency variances both result from a deviation in the quantity of input from what was budgeted. They can be either directly or indirectly related. For instance, a reduction in the amount of material used may be compensated for by an increase in the amount of labor. By the same token, a reduction in overall activity on the production line may result in a decrease in both factors.
- Answer (D) is **incorrect**. The labor efficiency variance is related to problems or the lack thereof in production departments; a volume variance is related to the use of capacity and may not be rooted in anything related to production (i.e., it could be caused by a lack of sales).

**[15] Gleim #: 7.7.171 -- Source: CMA 0408 2-215**

Underwood Corporation uses the following format to present performance results to the production managers.

	Month's <u>Actual</u>	Month's <u>Budget</u>	Price <u>Variance</u>	Quantity <u>Variance</u>
Direct materials	\$10,000	\$12,000	\$1,000 F	\$1,000 F
Direct labor	20,000	19,500	500 F	1,000 U
Variable overhead	4,000	4,000	100 U	100 F
Fixed overhead	12,000	12,200	200 F	
Sales units	50,000	52,000		

This format may be confusing to the production manager because

- A. Year-to-date information is not shown.
  - B. A fixed overhead volume variance is not shown.
  - C. More detail of variable overhead items should be included.
  - D. The report includes variances beyond the control and knowledge of the production manager.
- Answer (A) is **incorrect**. Managers are judged on individual time periods as well as cumulative year-to-date performance.
  - Answer (B) is **incorrect**. A production manager does not need to know the volume variance. That is typically outside the control of a production manager.
  - Answer (C) is **incorrect**. The concept of management by exception means that details are not necessary unless costs get out of hand; since the variance was minimal, there is no need for more detail.
  - Answer (D) is **correct**. The direct labor price variance is a function of contracts worked out with the union before the production period begins. Similarly, the material price variance is a measure of purchasing efficiency, not that of the production manager.

**[16] Gleim #: 7.7.172 -- Source: CMA 0408 2-219**

For a given time period, a company had a favorable material quantity variance, a favorable direct labor efficiency variance, and a favorable fixed overhead volume variance. Of the following, the one factor that could **not** have caused all three variances is

- A. The purchase of higher quality materials.
  - B. The use of lower-skilled workers.
  - C. The purchase of more efficient machinery.
  - D. A decrease in production supervision.
- Answer (A) is **incorrect**. The use of higher quality materials would explain a favorable material quantity variance but would tend to generate an unfavorable labor efficiency variance since higher quality materials require more careful handling and the workers would not be accustomed to working with those materials.
  - Answer (B) is **correct**. Lower-skilled workers tend to be less efficient, which would give rise to an unfavorable labor efficiency variance and possibly an unfavorable materials quantity variance.
  - Answer (C) is **incorrect**. More efficient machinery would tend to generate an unfavorable fixed overhead volume variance since the purchase resulted in higher fixed costs.
  - Answer (D) is **incorrect**. A decrease in production supervision would lead to less efficiency among laborers since there would be no one watching over their work.

**[17] Gleim #: 7.7.173 -- Source: CMA 0408 2-220**

Marten Company has a cost-benefit policy to investigate any variance that is greater than \$1,000 or 10% of budget, whichever is larger. Actual results for the previous month indicate the following.

	<u>Budget</u>	<u>Actual</u>
Raw material	\$100,000	\$89,000
Direct labor	50,000	54,000

The company should investigate

- A. Neither the material variance nor the labor variance.
- B. The material variance only.
- C. The labor variance only.
- D. Both the material variance and the labor variance.

- Answer (A) is **incorrect**. The materials variance meets one of the criteria.
- Answer (B) is **correct**. For materials, because the dollar variance is \$11,000 and 10% of budget is \$10,000, the dollar variance is the applicable test. Because  $\$11,000 > \$1,000$ , the materials variance meets the test and should be investigated. For direct labor, since the dollar variance is \$4,000 and 10% of budget is \$5,000, the percentage variance is the applicable test. Because  $\$4,000 < \$5,000$ , the labor variance fails the test and should not be investigated.
- Answer (C) is **incorrect**. Only the materials variance passes the test for investigation.
- Answer (D) is **incorrect**. Only the materials variance passes the test for investigation.

[1] Gleim #: 7.8.174 -- Source: CMA 1295 3-3

The variance that arises solely because the quantity actually sold differs from the quantity budgeted to be sold is

- A. Static budget variance.
- B. Master budget increment.
- C. Sales mix variance.
- D. Sales volume variance.

- Answer (A) is **incorrect**. A static budget variance is the difference between actual costs or revenues and those budgeted on a static budget.
- Answer (B) is **incorrect**. A master budget increment is an increase in a budgeted figure on the firm's master budget.
- Answer (C) is **incorrect**. The sales mix variance is caused when a company's actual sales mix is different from the budgeted sales mix.
- Answer (D) is **correct**. If a firm's sales differ from the amount budgeted, the difference could be attributable either to the sales price variance or the sales volume variance. The sales volume variance is the change in contribution margin caused by the difference between the actual and budgeted sales volumes.

[2] Gleim #: 7.8.175 -- Source: CMA 693 3-16

In analyzing company operations, the controller of the Jason Corporation found a \$250,000 favorable flexible-budget revenue variance. The variance was calculated by comparing the actual results with the flexible budget. This variance can be wholly explained by

- A. The total flexible budget variance.
- B. The total sales volume variance.
- C. The total static budget variance.
- D. Changes in unit selling prices.

- Answer (A) is **incorrect**. The total flexible budget variance includes items other than revenue.
- Answer (B) is **incorrect**. The sales volume variance represents the change in contribution margin caused by a difference between actual and budgeted units sold. However, given a flexible budget, there is no difference between budgeted and actual units sold. By definition, a flexible budget's volume is identical to actual volume.



- Answer (C) is **incorrect**. The total static budget variance includes many items other than revenue.
- Answer (D) is **correct**. Variance analysis can be used to judge the effectiveness of selling departments. If a firm's sales differ from the amount budgeted, the difference may be attributable to either the sales price variance or the sales volume (quantity) variance. Changes in unit selling prices may account for the entire variance if the actual quantity sold is equal to the quantity budgeted. None of the revenue variance is attributed to the sales volume variance because no such variance exists when a flexible budget is used. The flexible budget is based on the level of sales at actual volume.

**[3] Gleim #: 7.8.176 -- Source: CIA 593 IV-14**

The sales volume variance is partly a function of the unit contribution margin (UCM). For a single-product company, it is

- A. The difference between actual and master budget sales volume, times actual UCM.
- B. The difference between flexible budget and actual sales volume, times master budget UCM.
- C. The difference between flexible budget and master budget sales volume, times actual UCM.
- D. The difference between flexible budget and master budget sales volume, times master budget UCM.

- Answer (A) is **incorrect**. Budgeted, not actual, UCM is used to calculate this variance.
- Answer (B) is **incorrect**. The flexible budget volume is the actual volume, resulting in a zero variance.
- Answer (C) is **incorrect**. Budgeted, not actual, UCM is used to calculate this variance.
- Answer (D) is **correct**. For a single-product company, the sales volume variance is the difference between the actual and budgeted sales quantities times the budgeted UCM. If the company sells two or more products, the difference between the actual and budgeted product mixes must be considered. In that case, the sales volume variance equals the difference between (1) actual total unit sales times the budgeted weighted-average UCM for the actual mix and (2) budgeted total unit sales times the budgeted weighted-average UCM for the planned mix.

**[4] Gleim #: 7.8.177 -- Source: CMA 695 3-29**

For a company that produces more than one product, the sales volume variance can be divided into which two of the following additional variances?

- A. Sales price variance and flexible budget variance.
  - B. Sales mix variance and sales price variance.
  - C. Sales quantity variance and sales mix variance.
  - D. Sales mix variance and production volume variance.
- Answer (A) is **incorrect**. The sales price variance is a separate variance and is not a component of the sales volume variance.
  - Answer (B) is **incorrect**. The sales price variance is a separate variance and is not a component of the sales volume variance.
  - Answer (C) is **correct**. The sales volume variance can be divided into the sales quantity variance and the sales mix variance. The sales quantity variance is the change in contribution margin caused by the difference between actual and budgeted volume, assuming that budgeted sales mix, unit variable costs, and unit sales prices are constant. Thus, it equals the sales volume variance when the sales mix variance is zero. In a multiproduct firm, the sales mix variance is a variance caused by a sales mix that differs from that budgeted. For example, even when the sales quantity is exactly as budgeted, an unfavorable sales mix variance can be caused by greater sales of a low-contribution product at the expense of lower sales of a high-contribution product.
  - Answer (D) is **incorrect**. The production volume variance is a fixed overhead variance. It is not related to the sales volume variance.

**[Fact Pattern #1]**

Folsom Fashions sells a line of women's dresses. Folsom's performance report for November follows.

The company uses a flexible budget to analyze its performance and to measure the effect on operating income of the various factors affecting the difference between budgeted and actual operating income.

	Actual	Budget
Dresses sold	<u>5,000</u>	<u>6,000</u>
Sales	\$235,000	\$300,000
Variable costs	<u>(145,000)</u>	<u>(180,000)</u>
Contribution margin (CM)	90,000	120,000
Fixed costs	<u>(84,000)</u>	<u>(80,000)</u>
Operating income	<u>\$ 6,000</u>	<u>\$ 40,000</u>

**[8] Gleim #: 7.8.181 -- Source: CMA 1291 3-14**

(Refers to Fact Pattern #1)

The effect of the sales quantity variance on Folsom's contribution margin for November is

- A. \$30,000 unfavorable.
- B. \$18,000 unfavorable.
- C. \$20,000 unfavorable.
- D. \$15,000 unfavorable.

- Answer (A) is **incorrect**. The difference between the actual and budgeted contribution margins is \$30,000.
- Answer (B) is **incorrect**. The difference between actual and budgeted unit sales times the actual unit CM equals \$18,000.
- Answer (C) is **correct**. The sales quantity variance is the difference between the actual and budgeted units, times the budgeted unit CM.

$$(5,000 - 6,000) \times \frac{\$120,000}{6,000} = \$20,000 \text{ U}$$

- Answer (D) is **incorrect**. The sales price variance is \$15,000.

[10] Gleim #: 7.8.183 -- Source: CMA 1291 3-16

(Refers to Fact Pattern #1)

Folsom's variable cost flexible budget variance for November is

- A. \$5,000 favorable.
- B. \$5,000 unfavorable.
- C. \$4,000 favorable.
- D. \$4,000 unfavorable.

- Answer (A) is **correct**. The variable cost flexible budget variance is equal to the difference between actual variable costs and the product of the actual quantity sold and the budgeted unit variable cost ( $\$180,000 \div 6,000 = \$30$ ).

$$(\$30 \times 5,000) - \$145,000 = \$5,000 F$$

- Answer (B) is **incorrect**. The variance is favorable.
- Answer (C) is **incorrect**. The amount of the fixed cost variance is \$4,000.
- Answer (D) is **incorrect**. The amount of the fixed cost variance is \$4,000.

[11] Gleim #: 7.8.184 -- Source: CMA 1291 3-17

(Refers to Fact Pattern #1)

Folsom's fixed cost variance for November is

- A. \$5,000 favorable.
- B. \$5,000 unfavorable.
- C. \$4,000 favorable.
- D. \$4,000 unfavorable.

- Answer (A) is **incorrect**. The variable cost variance is \$5,000.
- Answer (B) is **incorrect**. The variable cost variance is \$5,000.
- Answer (C) is **incorrect**. The variance is unfavorable.
- Answer (D) is **correct**. The fixed cost variance equals the difference between actual fixed costs and budgeted fixed costs.

$$\$84,000 - \$80,000 = \$4,000 U$$

**[12] Gleim #: 7.8.185 -- Source: CMA 1291 3-18**

(Refers to Fact Pattern #1)

What additional information is needed for Folsom to calculate the dollar impact of a change in market share on operating income for November?

- A. Folsom's budgeted market share and the budgeted total market size.
- B. Folsom's budgeted market share, the budgeted total market size, and average market selling price.
- C. Folsom's budgeted market share and the actual total market size.
- D. Folsom's actual market share and the actual total market size.

- Answer (A) is **incorrect**. Folsom will need to know the actual total market size.
- Answer (B) is **incorrect**. Folsom will need to know the actual total market size.
- Answer (C) is **correct**. A change in market share reflects a change in relative competitiveness. To isolate the effect on operating income of an increase or a decrease in market share, the company must know its budgeted and actual market shares, the actual size of the market for November, and the budgeted weighted-average unit contribution margin. Such computations may help Folsom to determine whether its decline in sales resulted from a loss of competitiveness or a shrinkage of the market.
- Answer (D) is **incorrect**. Folsom will need to know the budgeted market share.

**[Fact Pattern #2]**

Clear Plus, Inc., manufactures and sells boxes of pocket protectors. The static master budget and the actual results for May appear in the opposite column.

	<u>Actuals</u>	<u>Static Budget</u>
Unit sales	<u>12,000</u>	<u>10,000</u>
Sales	\$132,000	\$100,000
Variable costs of sales	<u>(70,800)</u>	<u>(60,000)</u>
Contribution margin	61,200	40,000
Fixed costs	<u>(32,000)</u>	<u>(30,000)</u>
Operating income	<u>\$ 29,200</u>	<u>\$ 10,000</u>

**[13] Gleim #: 7.8.186 -- Source: CMA 695 3-26**

(Refers to Fact Pattern #2)

The operating income for Clear Plus using a flexible budget for May is

- A. \$12,000
- B. \$19,200
- C. \$30,000
- D. \$18,000

- Answer (A) is **incorrect**. Assuming that all costs are variable results in \$12,000.
- Answer (B) is **incorrect**. The amount of \$19,200 is based on actual variable costs.
- Answer (C) is **incorrect**. The amount of \$30,000 is based on actual sales revenues.
- Answer (D) is **correct**. A flexible budget is prepared after the budget period has ended and actual sales and costs are known. Assuming that unit sales price ( $\$100,000 \div 10,000 \text{ units} = \$10$ ) and variable costs of sales ( $\$60,000 \div 10,000 \text{ unit} = \$6$ ) and total fixed costs (\$30,000) do not change, a flexible budget may be prepared for the actual sales level (12,000 units). Hence, the budgeted contribution margin (sales – variable costs of sales) equals \$48,000 [ $(12,000 \text{ units} \times \$10) - (12,000 \text{ units} \times \$6)$ ]. The operating income is therefore \$18,000 (\$48,000 CM – \$30,000 FC).

**[14] Gleim #: 7.8.187 -- Source: CMA 695 3-27**

(Refers to Fact Pattern #2)

Which one of the following statements concerning Clear Plus's actual results for May is correct?

- A. The flexible budget variance is \$8,000 favorable.
  - B. The sales price variance is \$32,000 favorable.
  - C. The sales volume variance is \$8,000 favorable.
  - D. The flexible budget variable cost variance is \$10,800 unfavorable.
- Answer (A) is **incorrect**. The flexible budget variance is \$11,200 favorable ( $\$29,200 \text{ actual operating income} - \$18,000 \text{ flexible budget operating income}$ ).
  - Answer (B) is **incorrect**. The sales price variance is \$12,000 [ $\$132,000 \text{ actual sales} - (12,000 \text{ units sold} \times \$10)$ ].

- Answer (C) is **correct**. The sales volume variance is the change in contribution margin caused by the difference between the actual and budgeted volume. It equals the budgeted unit contribution margin times the difference between actual and expected volume, or \$8,000  $[(12,000 - 10,000) \times (\$10 - \$6)]$ . The sales volume variance is favorable because actual sales exceeded budgeted sales.
- Answer (D) is **incorrect**. The total projected variable costs at the actual sales level equal \$72,000 (12,000 units  $\times$  \$6). Thus, the variable cost variance is \$1,200 favorable (\$72,000 – \$70,800 actual).

**[17] Gleim #: 7.8.190 -- Source: CMA 687 4-16**

The following information is available for the Mitchelville Products Company for the month of July.

	<u>Master Budget</u>	<u>Actual</u>
Units	4,000	3,800
Sales revenue	\$60,000	\$53,200
Variable manufacturing costs	16,000	19,000
Fixed manufacturing costs	15,000	16,000
Variable selling and administrative expense	8,000	7,600
Fixed selling and administrative expense	9,000	10,000

The contribution margin volume variance for the month of July would be

- A. \$400 unfavorable.
  - B. \$1,800 unfavorable.
  - C. \$200 favorable.
  - D. \$6,800 unfavorable.
- Answer (A) is **incorrect**. The difference between budgeted and actual variable selling and administrative costs is \$400.

- Answer (B) is **correct**. The volume variance isolates the effect of selling more or less units than budgeted. It equals budgeted unit contribution margin (UCM) times the difference between budgeted and actual units sold. Given expected sales of 4,000 units and revenue of \$60,000, unit price is \$15. Variable costs are \$16,000 for manufacturing and \$8,000 for selling, and unit variable cost is \$6 (\$24,000 ÷ 4,000 units). The UCM is \$9 (\$15 – \$6). Since actual sales were 200 units less than budgeted (4,000 – 3,800), the lost contribution margin was \$1,800 (200 × \$9). This variance is unfavorable because actual sales were less than budgeted.
- Answer (C) is **incorrect**. The difference between budgeted and actual units is 200 units.
- Answer (D) is **incorrect**. The difference between budgeted and actual revenue is \$6,800.

**[26] Gleim #: 7.8.199 -- Source: CMA 0205 2-40**

Teaneck, Inc. sells two products, Product E and Product F, and had the following data for last month:

	Product E		Product F	
	Budget	Actual	Budget	Actual
Unit sales	5,500	6,000	4,500	6,000
Unit contribution margin	\$4.50	\$4.80	\$10.00	\$10.50

The company's sales mix variance is

- A. \$3,300 favorable.
- B. \$3,420 favorable.
- C. \$17,250 favorable.
- D. \$18,150 favorable.



- Answer (A) is **correct**. The first step is to calculate the contribution margin (CM) for a “composite” unit using budgeted mix percentages and budgeted margins:

Product E: $\{[5,500 \div (5,500 + 4,500)] \times \$4.50\}$	= \$2.475
Product F: $\{[4,500 \div (5,500 + 4,500)] \times \$10.00\}$	= <u>\$4.500</u>
Composite Budget UCM	<u><u>\$6.975</u></u>

This process is repeated using actual mix percentages and budgeted margins:

Product E: $\{[6,000 \div (6,000 + 6,000)] \times \$4.50\}$	= \$2.250
Product F: $\{[6,000 \div (6,000 + 6,000)] \times \$10.00\}$	= <u>\$5.000</u>
Composite Actual UCM	<u><u>\$7.250</u></u>

The difference between the two is multiplied by the number of units sold to arrive at the sales mix variance  $[(6,000 + 6,000) \times (\$7.250 \text{ actual} - \$6.975 \text{ budget}) = (12,000 \times \$0.275) = \$3,300 \text{ favorable}]$ .

- Answer (B) is **incorrect**. Improperly using unweighted contribution margins results in \$3,420 favorable.
- Answer (C) is **incorrect**. The amount of \$17,250 is the sales volume variance.
- Answer (D) is **incorrect**. The sales volume variance in units multiplied by the actual price equals \$18,150 favorable; it is not a mix variance.

**[27] Gleim #: 7.8.200 -- Source: CMA 0408 2-218**

The following information is from the accounting records of St. Charles Enterprises.

	Static Budget	Actual
Sales volume (units)	82,000	75,000
Selling price/unit	\$ 15.00	\$ 15.00
Variable cost/unit	9.00	9.25
Fixed cost	280,000	285,000

A staff assistant performed a comparison of budget and actual data and calculated an unfavorable operating income variance of \$65,750. The assistant concluded that performance did not meet expectations because there was an unfavorable variance in operating income. Which one of the following is the best evaluation of this preliminary conclusion?

- A. Both the conclusion and the variance calculation are correct.
  - B. The conclusion is incorrect, but the variance calculation is informative.
  - C. The conclusion is correct, but the variance calculation could be more informative.
  - D. Both the conclusion and the variance calculation are incorrect.
- Answer (A) is **incorrect**. Simply concluding that performance was inadequate does not provide a manager with useful information.
  - Answer (B) is **incorrect**. An operating income variance in isolation provides a manager with very little useful information. The conclusion was basically correct, but it was not informative.

- Answer (C) is **correct**. St. Charles' budget and actual operating income can be calculated as follows:

	Static Budget		Actual Results	
Sales	82,000 units @ \$15.00 =	\$1,230,000	75,000 units @ \$15.00 =	\$1,125,000
Variable costs	82,000 units @ \$ 9.00 =	(738,000)	75,000 units @ \$ 9.25 =	(693,750)
Contribution margin		\$ 492,000		\$ 431,250
Fixed costs		(280,000)		(285,000)
Operating income		<u>\$ 212,000</u>		<u>\$ 146,250</u>

The variance is correctly calculated at \$65,750 unfavorable (\$146,500 – \$212,000). However, an operating income variance in isolation provides a manager with very little useful information. The component of the variance attributable to a difference in budgeted and actual sales, as well as the distinction between variable and fixed costs, are lost just looking at operating income.

- Answer (D) is **incorrect**. That variance calculation is correct.

[28] Gleim #: 7.8.201 -- Source: CMA 0408 2-228

The following performance report was prepared for Dale Manufacturing for the month of April:

	Actual Results	Static Budget	Variance
Sales units	100,000	80,000	20,000 F
Sales dollars	\$190,000	\$160,000	\$30,000 F
Variable costs	125,000	96,000	29,000 U
Fixed costs	45,000	40,000	5,000 U
Operating income	<u>\$ 20,000</u>	<u>\$ 24,000</u>	<u>\$ 4,000 U</u>

If inventories did **not** change during the month, using a flexible budget, Dale's total production-volume variance is

- A. \$4,000 unfavorable.
  - B. \$6,000 favorable.
  - C. \$10,000 favorable.
  - D. \$20,000 unfavorable.
- Answer (A) is **incorrect**. The variance in net income is \$4,000.
  - Answer (B) is **incorrect**. The volume variance is \$10,000.
  - Answer (C) is **correct**. The production volume variance is based on the over- (or under-) applied fixed overhead for the period. The fixed overhead allocation rate is \$.50 per unit ( $\$40,000 \div 80,000$  units). With actual results exceeding the standard by 20,000 units, the overapplied overhead would have been \$10,000 ( $20,000 \text{ units} \times \$.50$ ).
  - Answer (D) is **incorrect**. The difference in unit sales and production is 20,000 units, not dollars.



## STUDY UNIT EIGHT RESPONSIBILITY ACCOUNTING AND FINANCIAL MEASURES

### Introduction

The objective of U.8 present a variety of tools that top managers (such as CFOs) use to evaluate mid-level managers and the organization as a whole. Mid-level managers include plant managers, product-line managers, heads of research and development (R&D) departments, and regional sales managers. They all have significant responsibility in helping the organization achieve its strategic goals.

We introduce the concept of responsibility accounting and a performance evaluation framework that consists of the following organizational subunits: cost centers, revenue centers, profit centers, and investment centers. Tied to the concept of controllability, different mechanisms are used to evaluate the short-term financial performance of each of these subunits of the organization.

The coverage in U.8 has a strong strategic focus since mid-level managers have a significant responsibility for achieving strategic goals, and it is critical that the performance evaluation be aligned with these strategic goals. Transfer pricing, covered in U.8, is an important topic for the assessment of both profit centers and investment centers. When buying and selling exist between units within the organization, the determination of the transfer price will affect the performance evaluation of both the buying unit and the selling unit. Therefore, we cover the topic of transfer pricing both as an incentive issue (having the right incentive for the unit managers to choose to trade inside or outside the firm in a manner that achieves the firm's strategic and financial goals) and as a motivation issue (the choice of a transfer price should result in a fair measure of performance for both units).

This chapter covers the measures used to evaluate management performance. These measures include the balanced scorecard, the contribution income statement, and cost allocation. These topics are covered here in the important role they play in management performance evaluation. We begin with an explanation of the broad concepts underlying performance evaluation.

**Management control** refers to the evaluation by upper-level managers of the performance of mid-level managers.

Management control,

- focuses on higher- level managers and long-term, strategic issues.
- is more consistent with the **management-by-objectives** approach, in which long-term objectives such as growth and profitability are determined and performance is periodically measured against these goals.
- has a broader and more strategic objective:
  - to evaluate the unit's overall profitability as well as the performance of its manager,
  - to decide whether the unit should be retained or closed, and
  - to motivate the manager to achieve , top management's goals.



- Because of this broader focus, various objectives for management control generally have multiple measures of performance rather than a single financial or operating measure, as is sometimes true in operational control.

## Objectives of Management Control

In a management-by-objectives approach, top management assigns a set of responsibilities to each mid-level manager. These areas of responsibility are often called *strategic business units* (SBUs). The concept of a strategic business unit is particularly useful for diversified firms that need performance measures to rationalize and manage the different business units.

Strategic performance measurement systems are implemented in four different forms, depending on the nature of the manager's responsibilities: the revenue center, cost center, profit center, and investment center.

A **strategic business unit** consists of a well-defined set of controllable operating activities over which the SBU manager is responsible.

### The objectives of management control are to:

1. **Motivate** managers to exert a high level of effort to achieve the goals set by top management.
2. Provide the right incentive for managers to make decisions consistent with the goals set by top management, that is, to align managers' efforts with desired strategic goals. The alignment of managers' goals with those of top management is also referred to as **goal congruence**.
3. Determine **fairly** the rewards earned by managers for their effort and skill and the effectiveness of their decision making.

## Characteristics of effective management control systems

- (a) closely aligned to the organization's strategy,
- (b) fit the organization's structure, and
- (c) motivate managers and employees to give effort to achieve the organization's goals.

(a) To be effective, management control systems should be closely aligned to the company's strategies and goals.

Examples of strategies are developing innovative products-to increase market share in key product areas, or maximizing short-run income by reducing costs and forgoing risky long-run investments in R&D. Suppose management decides, wisely or unwisely, to maximize short-run income. The management control system must then reinforce this goal. The control system should provide managers with information – such as contribution margins on individual products-that will help them make short-run decisions. The control system should also tie managers' rewards to short-run income.

(b) Management control systems should be designed to fit the company's structure and the decision-making responsibility of individual managers.

For example: Consider the R&D manager at GlaxoSmithKline, a pharmaceutical company.  
The management control system for this manager should focus on :



- the R&D activities required for different drug projects,
- the number of scientists needed,
- the scheduled dates for completing different projects, and
- the preparation of reports comparing actual and budgeted performance.

Now consider a product-line manager responsible for the manufacture, sale, and distribution of ketchup at Heinz, a food products company.

- The company's management control system should
- provide this manager with information about customer satisfaction, market share, manufacturing costs and product-line profitability-information that helps the manager plan and control the operations better.

The manager of the Heinz ketchup product line requires very different information than the information required by the R&D manager at GlaxoSmithKline. But, in both cases, the information provided is designed to aid the manager's decision making.

(c) Effective management control systems should also motivate managers and employees. Motivation is the desire to attain a selected goal (the goal-congruence aspect) combined with the resulting pursuit of that goal (the effort aspect).

Goal congruence exists when individuals and groups work toward achieving the organization's goals-that is, managers working in their own best interest take actions that align with the overall goals of top management.

For example, in capital budgeting, making decisions based on discounting long-run cash flows at the required rate of return best achieves company goals. But if the management control system evaluates managers on the basis of short-run accrual accounting income, managers will be tempted to make decisions to maximize accrual accounting income, which may not be in the long-run best interest of the organization as a whole.

Management control systems must fit an organization's structure. An organization whose structure is decentralized has additional issues to consider for its management control system to be effective.

## Responsibility accounting

**Responsibility accounting** : is a system that measures the plans - by budgets - and actions - by actual results- of each responsibility center, also called a strategic business unit .

Strategic performance measurement is a system used by top management to evaluate SBU managers. It is used when responsibility can be effectively delegated to SBU managers and adequate measures for evaluating the performance of the managers exist. Before designing strategic performance measurement systems, top managers determine when delegation of responsibility (called decentralization) is desirable.

### Decentralization

A firm is decentralized if it has chosen to delegate a significant amount of responsibility to SBU managers. In contrast, a centralized firm reserves much of the decision making at the top management level.



## Types of responsibility centers (Strategic Business Units)

Four types of responsibility centers are

1. Cost center-the manager is accountable for costs only.

**Cost SBU** Production or support SBUs within the firm that have the goal of providing the best quality product or service at the lowest cost

Example: The maintenance department of a Marriott hotel is a cost center because the maintenance manager is responsible only for costs, so this budget is based on costs.

- 2 Revenue center-the manager is accountable for revenues only.

**Revenue SBU** An SBU with responsibility for sales, defined either by product line or by geographical area

3. Profit center-the manager is accountable for revenues and costs.

**Profit SBU** An SBU that generates revenues and incurs the major portion of the cost for producing these revenues

4. Investment center-the manager is accountable for investments, revenues, and costs.

**Investment SBU** An SBU that includes assets employed by the SBU as well as profits in performance evaluation

A responsibility center can be structured to promote better alignment of individual and company goals.

## Which type of responsibility centers will be applied?

The choice of a profit, cost, or revenue SBU depends on the nature of the production and selling environment in the firm.

Products that have little need for coordination between the manufacturing and selling functions are good candidates for cost centers. These include many commodity products such as food and paper products.

For such products, the production manager rarely needs to adjust the functionality of the product or the production schedule to suit a particular customer. For this reason, production managers should focus on reducing cost while sales managers focus on sales; this is what cost and revenue SBUs accomplish.

In contrast, sometimes close coordination is needed between the production and selling functions. For example, high-fashion and consumer products require close coordination so that consumer information coming into the selling function reaches the design and manufacturing function. Cost and revenue SBUs could fail to provide the incentive for coordination; in this case, production managers would be focusing on cost and not listening to the ever-changing demands coming from the selling function. A preferred option is to use the profit center for both the revenue and production managers so that both coordinate efforts to achieve the highest overall profit.

When a firm has many different profit SBUs because it has many different. Product lines, comparing their performance could be difficult because they vary greatly in size and in the nature of their products and services. A preferred approach is to use **investment SBUs**, which include assets employed by the SBU as well as profits in the performance evaluation.





## Objectives and applications of strategic performance measurement in three common strategic business units: cost centers, revenue centers, and profit centers.

### COST STRATEGIC BUSINESS UNITS

Cost SBUs include direct manufacturing departments such as assembly and finishing and manufacturing support departments such as materials handling, maintenance, and engineering. The direct manufacturing and manufacturing support departments are often evaluated as cost SBUs since these managers have significant direct control over costs but little control over revenues or decision making for investment in facilities.

#### Strategic Issues Related to Implementing Cost SBUs

- cost shifting,
- excessively focusing on short-term objectives, and
- the tendency of managers and top management to miscommunicate because of the pervasive problem of budget slack.

### Cost Allocation and SBU evaluation

A pervasive issue when using cost SBUs is how to allocate the jointly incurred costs of service departments, such as IT, engineering, human resources, or maintenance, to the departments using the service.

The choice of method affects the amount of cost allocated to each cost SBU and therefore is critical in effective cost SBU evaluation.

For example, if the cost of maintenance is allocated based on the square feet of space in each production department, the departments with more space have higher costs. The incentives of such an allocation method are not clear because the production departments likely cannot control the amount of space they occupy. Alternatively, if maintenance costs are allocated on the basis of the number of maintenance jobs requested, the production departments can control their allocated maintenance costs by controlling usage.

#### The criteria for choosing the cost allocation method, are the same as the objectives for management control: to

- (1) motivate managers to exert a high level of effort,
- (2) provide an incentive for managers to make decisions consistent with top management's goals, and
- (3) provide a basis for a fair evaluation of managers' performance.

For example, when management wants to encourage production departments to *reduce* the amount of maintenance, allocation based on usage provides the desired incentive. In contrast, if management wants the departments to increase the use of maintenance to improve the serviceability of the equipment, the most effective incentive might be not to allocate the maintenance cost or perhaps to subsidize it in some way.

A useful guide in choosing the cost allocation method, in addition to the three criteria just explained, is to use dual allocation. **Dual allocation** is a cost allocation method that separates fixed and variable costs. Variable costs are directly traced to user departments, and fixed costs are allocated on some logical basis.

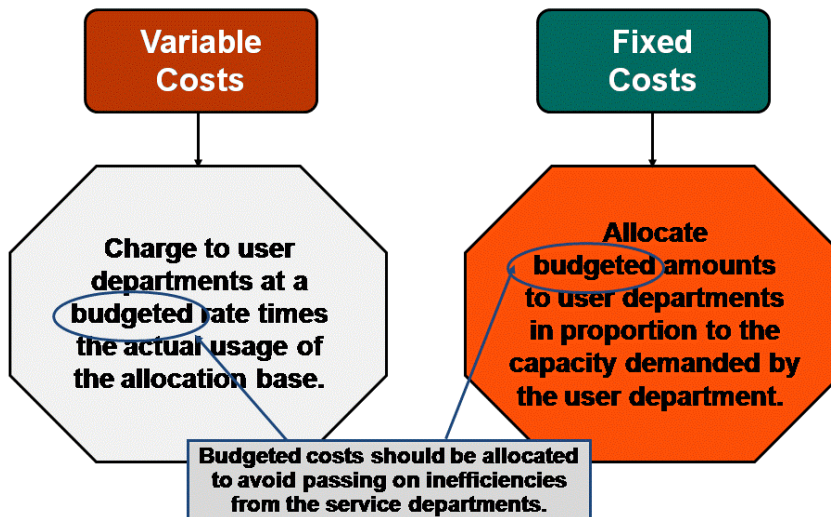
For example, the variable costs of maintenance, such as supplies, labor, and parts, can be traced to each maintenance job and charged directly to the user department. This approach is both fair and positively motivating. In contrast, the fixed costs of the maintenance department (training, manuals, equipment, etc.) that cannot be traced to each maintenance job should be allocated to the user departments using a basis that fairly



reflects each department's use of the service. For example, those departments whose maintenance jobs require more expensive equipment might be allocated a higher proportion of the maintenance department's fixed costs. To improve on dual allocation, indirect costs could be traced to cost SBUs using activity-based costing.

This approach tends to produce the most accurate cost assignment and therefore would be the most motivating and fairest to the SBU managers.

## Separate Fixed and Variable Costs: Dual Allocation



## Separate Fixed and Variable Costs: Dual Allocation

**Ace Co. has a maintenance department and two operating departments: cutting and assembly. Variable maintenance costs are budgeted at \$0.60 per machine hour. Fixed maintenance costs are budgeted at \$200,000 per year. Data relating to the current year are:**

User Departments	Percent of Capacity Demanded	Actual Hours Used
Cutting	60%	80,000
Assembly	40%	40,000
Total hours	100%	120,000

**Allocate maintenance costs to the two operating departments.**



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	Cutting Department	Assembly Department
Variable cost allocation:		
\$0.60 × 80,000 hours used	\$ 48,000	
\$0.60 × 40,000 hours used		\$ 24,000
Fixed cost allocation		
Total allocated cost		

**Variable costs are allocated based on hours used.**

	Cutting Department	Assembly Department
Variable cost allocation:		
\$0.60 × 80,000 hours used	\$ 48,000	
\$0.60 × 40,000 hours used		\$ 24,000
Fixed cost allocation		
60% of \$200,000	120,000	
Total allocated cost	\$ 168,000	

**Variable costs are allocated based on hours used.  
Fixed costs are allocated based on  
capacity demanded..**

	Cutting Department	Assembly Department
Variable cost allocation:		
\$0.60 × 80,000 hours used	\$ 48,000	
\$0.60 × 40,000 hours used		\$ 24,000
Fixed cost allocation		
60% of \$200,000	120,000	
40% of \$200,000		80,000
Total allocated cost	\$ 168,000	\$ 104,000

**Variable costs are allocated based on hours used.  
Fixed costs are allocated based on  
capacity demanded..**



## RESPONSIBILITY AND CONTROLLABILITY

Controllability is the degree of influence that a specific manager has over costs, revenues, and related items for which he or she is responsible. A controllable cost is any cost that is primarily subject to the influence of a given *responsibility center manager* for a given *period*.

A responsibility accounting system could either exclude all uncontrollable costs from a manager's performance report or segregate such costs from the controllable costs. For example, a machining supervisor's performance report might be confined to quantities not costs - of direct materials, direct manufacturing labor, power, and supplies.

### In practice, controllability is difficult to pinpoint for at least two reasons:

1. Few costs are clearly under the sole influence of one manager. For example, *prices* of direct materials may be influenced by a purchasing manager, but these prices also depend on market conditions beyond the manager's control. *Quantities* used may be influenced by a production manager, but quantities used also depend on the quality of materials purchased. Moreover, managers often work in teams. How can individual responsibility be evaluated in a team situation?
2. With a long enough time span, all costs will come under somebody's control. However, most performance reports focus on periods of a year or less. A current manager may have inherited a predecessor's problems and inefficiencies. For example, present managers may have to work under undesirable contracts with suppliers or labor unions that were negotiated by their predecessors. How can we separate what the current manager actually controls from the results of decisions made by others? Exactly what is the current manager accountable for? Answers may not be clear-cut.

Executives differ in how they embrace the controllability notion when evaluating those reporting to them. Some company presidents regard the budget as a firm commitment that must be met. Failure to meet the budget is viewed unfavorably. Other presidents believe a more risk-sharing approach with managers is preferable, in which noncontrollable factors and performance relative to competitors are taken into account when judging the performance of managers who fail to meet their budgets.

<b>Controllable cost</b> .A cost that a manager or employee has discretion in choosing to incur or can significantly influence the amount of within a given, usually short, period of time. In other words, <b>Controllable cost</b> . Any cost that is primarily subject to the influence of a given responsibility center manager for a given period.
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<b>Controllability</b> . Degree of influence that a specific manager has over costs, revenues, and related items for which he or she is responsible.
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## PROFIT STRATEGIC BUSINESS UNITS

The profit SBU manager's goal is to earn profits. A key advantage of the profit SBU is that it brings the manager's incentives into congruence with those of top management: to improve the firm's profitability. Moreover, the profit SBU should also motivate individual managers because by earning profits, the managers are contributing directly to the firm's success. For these reasons, the profit SBU meets the management control objectives of motivation and decision making explained earlier.

### **Strategic Role of Profit SBUs**

Three strategic issues cause firms to choose profit SBUs rather than cost or revenue SBUs.

- **First, profit SBUs provide the incentive for the desired coordination among the marketing, production, and support functions. The handling of rush orders is a good example**
- **A second reason that firms use profit SBUs rather than cost SBUs is to motivate managers to consider their product as marketable to outside customers.**
- **The third reason for choosing profit SBUs is to motivate managers to develop new ways to make profit from their products and services**



## The Contribution Income Statement

The **contribution margin approach** to performance evaluation is emphasized in responsibility accounting because it focuses on controllability, as opposed to the gross margin approach which is used for external reporting. The contribution margin approach lends itself to relevant revenue and relevant cost analysis.

**Contribution margin** = Revenues – Variable costs, both manufacturing and S&A

**Gross margin** = Revenues – Manufacturing costs, both variable and fixed

A **segment** is a product line, geographical area, or other meaningful subunit of the organization.

**Allocation of central administration costs** is a fundamental issue in responsibility accounting. It is usually made based on budgeted revenue or contribution margin. If central administrative or other fixed costs are not allocated, responsibility centers might reach their revenue or contribution goals without covering all fixed costs.

The following comparison illustrates this difference:

GAAP Approach			Contribution Margin Approach		
Sales		\$xxx,xxx	Sales		\$xxx,xxx
Production costs only:			Variable costs only:		
Variable production costs	\$xx,xxx		Variable production costs	\$xx,xxx	
Fixed production costs	xx,xxx	(xx,xxx)	Variable S&A expenses	xx,xxx	(xx,xxx)
Gross margin		<u>\$ xx,xxx</u>	Contribution margin		<u>\$ xx,xxx</u>

2. The following is an example of a contribution margin income statement:

Sales		\$150,000
Variable production costs		(40,000)
Manufacturing contribution margin		<u>\$110,000</u>
Variable S&A expenses		(20,000)
Contribution margin		<u>\$ 90,000</u>
Controllable fixed costs:		
Fixed production costs	\$30,000	
Fixed S&A expenses	25,000	(55,000)
Short-run performance margin		<u>\$ 35,000</u>
Traceable fixed costs:		
Depreciation	\$10,000	
Insurance	5,000	(15,000)
Segment margin		<u>\$ 20,000</u>
Allocated common costs		(10,000)
Segment operating income		<u>\$ 10,000</u>

## COMMON COSTS

1. Common costs are the costs of products, activities, facilities, services, or operations shared by two or more cost objects.

a. The term **joint costs** is frequently used to describe the common costs of a single process that yields two or more joint products.

2. The difficulty with common costs is that they are **indirect costs** whose allocation may be arbitrary.

a. A direct **cause-and-effect relationship** between a common cost and the actions of the cost object to which it is allocated is desirable. Such a relationship promotes acceptance of the allocation by managers who perceive the fairness of the procedure, but identification of cause and effect may not be feasible.

b. An alternative allocation criterion is the **benefit received**. For example, advertising costs that do not relate to particular products may increase sales of all products.

Allocation based on the increase in sales by organizational subunits is likely to be accepted as equitable despite the absence of clear cause-and-effect relationships.





c. Two specific approaches to **common cost allocation** are the stand-alone method and the incremental method.

1) The **stand-alone method** allocates a common cost on a proportionate basis using data regarding each cost object.

2) The **incremental method** requires ranking the users of the cost object. The primary party is then allocated its stand-alone cost, with the secondary party receiving the balance of the common costs.

### Example: stand-alone method

A consultant in Tampa is planning to go to Chicago and meet with an international client.

The round-trip Tampa/Chicago/Tampa airfare costs \$540.

The consultant is also planning to attend a business meeting with a North Carolina client in Durham.

The round-trip Tampa/Durham/Tampa airfare costs \$360.

The consultant decides to combine the two trips into a Tampa/Durham/Chicago/Tampa itinerary that will cost \$760.

How much should the consultant charge to the North Carolina client?

$$\$360 \div (\$360 + \$540) = .40$$

$$.40 \times \$760 = \$304$$

How much to the international client?

$$\$760 - \$304 = \$456$$

### Example: The incremental method

Assume that the business meeting in Chicago is viewed as the primary party.

What would be the cost allocation?

International client (primary)	\$540
Durham client (incremental)	$\$760 - \$540 = \$220$

3. Cost allocation is necessary for making economic decisions, e.g., the price to charge for a product, whether to make or buy a part, or whether to divest a segment.

4. Cost allocation is also necessary for external financial reporting and for calculation of reimbursements, such as those involved in governmental contracting.



5. Furthermore, cost allocation serves as a **motivator**. For example, designers of products may be required to include downstream costs, such as servicing and distribution, in their cost projections to fix their attention on how their efforts affect the total costs of the company.

a. Another typical example of the motivational effects of cost allocation is that it tends to encourage marketing personnel to emphasize products with large contribution margins.

6. A persistent problem in large organizations is the treatment of the costs of headquarters and other **central support costs**. Such costs are very frequently allocated.

a. Research has shown that central support costs are allocated to departments or divisions for the following reasons:

1) The allocation reminds managers that support costs exist and that the managers would incur these costs if their operations were independent.

2) The allocation also reminds managers that profit center earnings must cover some amount of support costs.

3) Departments or divisions should be motivated to use central support services appropriately.

4) Managers who must bear the costs of central support services that they do not control may be encouraged to exert pressure on those who do. Thus, they may be able to restrain such costs indirectly.

7. Negative behavioral effects may arise from arbitrary cost allocations.

a. Managers' morale may suffer when allocations depress operating results.

b. Dysfunctional conflict may arise among managers when costs controlled by one are allocated to others.

c. Resentment may result if cost allocation is perceived to be arbitrary or unfair. For example, an allocation on an ability-to-bear basis, such as operating income, penalizes successful managers and rewards underachievers and may therefore have a demotivating effect.



## Financial Measures

1. **Product profitability analysis** allows management to determine whether a product is providing any coverage of fixed costs.

EXAMPLE:

- a. At first glance, a dairy operation appears to be comfortably profitable.

Sales	\$540,000
Variable Costs	<u>312,000</u>
Contribution margin	\$228,000
Other traceable costs:	
Marketing	116,000
R&D	<u>18,000</u>
Product line margin	\$ 94,000
Fixed costs	<u>24,000</u>
Operating income	<u>\$ 70,000</u>

- b. A product profitability analysis shows an entirely different picture. Two product lines are losing money, and one is not even covering its own variable costs.

	Milk	Cream	Cottage Cheese	Total
Sales	\$300,000	\$ 60,000	\$180,000	\$540,000
Variable costs	<u>110,000</u>	<u>62,000</u>	<u>140,000</u>	<u>312,000</u>
Contribution margin	\$190,000	\$ (2,000)	\$ 40,000	\$228,000
Other traceable costs:				
Marketing	66,000	10,000	40,000	116,000
R&D	<u>8,000</u>	<u>4,000</u>	<u>6,000</u>	<u>18,000</u>
Product line margin	<u>\$116,000</u>	<u>\$(16,000)</u>	<u>\$ (6,000)</u>	\$ 94,000
Fixed costs				<u>24,000</u>
Operating income				<u>\$ 70,000</u>

2. **Business unit profitability analysis** performs the same function on the segment level.

- a. EXAMPLE: A business unit profitability analysis for a company that provides research services allows management to see which branch offices are the most profitable.

	Sacramento	Omaha	Albany	Jacksonville	Total
Sales	\$1,200,000	\$800,000	\$2,000,000	\$4,600,000	\$8,600,000
Variable costs of sales	800,000	460,000	1,400,000	3,200,000	5,860,000
Other variable costs	<u>256,000</u>	<u>176,000</u>	<u>320,000</u>	<u>544,000</u>	<u>1,296,000</u>
Contribution margin	\$ 144,000	\$164,000	\$ 280,000	\$ 856,000	\$1,444,000
Traceable fixed costs	<u>150,000</u>	<u>100,000</u>	<u>160,000</u>	<u>220,000</u>	<u>630,000</u>
Business unit margin	<u>\$ (6,000)</u>	<u>\$ 64,000</u>	<u>\$ 120,000</u>	<u>\$ 636,000</u>	\$ 814,000
Nontraceable fixed costs					<u>200,000</u>
Operating income					<u>\$ 614,000</u>





3. **Customer profitability analysis** enables a firm to make decisions about whether to continue servicing a given customer.
- a. **EXAMPLE:** At first glance, it appears that the two unprofitable customers should be dropped.

	Gonzales	Abdullah	Patel	Kawanishi	Total
Sales	\$10,000	\$40,000	\$62,000	\$22,000	\$134,000
Cost of goods sold	7,200	26,000	41,000	18,100	92,300
Other relevant costs	1,000	2,200	4,400	4,100	11,700
Customer margin	\$ 1,800	\$11,800	\$16,600	\$ (200)	\$ 30,000
Allocated fixed costs	2,000	6,000	8,800	4,000	20,800
Operating income	\$ (200)	\$ 5,800	\$ 7,800	\$(4,200)	\$ 9,200

- b. Dropping Kawanishi makes sense. However, Gonzales is contributing to the coverage of fixed costs, costs which would have to be shifted to the other customers if Gonzales were dropped.

## PERFORMANCE MEASURES

Measuring performance is an integral part of any management control system. Making strategic planning and control decisions requires information about how different subunits of the organization have performed.

### Types of performance measures

#### A) Financial measures

1) Internal financial measures: Many performance measures, such as operating income, rely on internal financial information, increasingly companies are supplementing internal financial measures with measures based on :

2) External financial measures (such as stock prices)

#### B) Non-financial Measures :

1) Internal nonfinancial measures based on internal non-financial information ( such as defect rates, Manufacturing lead times, Number of new patents).

2) External non-financial measure based on external non-financial information (such as customer satisfaction ratings and Market share).

Some organizations present financial and non-financial performance measures for their subunits in a single report called the ***balanced scorecard***.

To emphasize the importance of using strategic information, both financial and Non-financial, accounting reports of a firm's performance are now often based on ***critical successes factors*** in four different dimensions. One dimension is financial, the other three dimensions are non-financial (customer satisfaction, internal business processes, Innovation and learning).

We will focus on the most widely used performance measures for investment strategic business units covering on intermediate to long time horizon.

These are internal financial measures based on accounting number, routinely reported by organizations.



### The Strategic Role of Investment Units

- To *motivate* managers to exert a high level of effort to achieve the goals of the firm.
- To provide the right *incentive* for managers to make decisions that are consistent with the goals of top management.
- To *fairly* determine the rewards earned by the managers for their effort and skill.

### RETURN ON INVESTMENT (ROI)

ROI is an accounting measure of income (Profit) divided by an accounting measure of investment in the business unit.

$$ROI = \frac{\text{Income}}{\text{Investment}}$$

ROI is also called the accounting rate of return or the accrual accounting rate of return.

How do investment SBU, achieve these three objectives?

- 1) ROI is clear and intuitive and is generally within the manager's control, thus, ROI *motivate* managers to exert a high level of effort to achieve goals set by top management.
- 2) ROI can achieve *goal congruence* since ROI is a critical financial performance measure for the firm as a whole. Each successful investment SBU contributes directly to firms' success.
- 3) ROI provides *fairness* of reports because use of investment SBUs provides a sound basis for comparing the performance of units of different size.

#### \* Definition and Interpretation

ROI is the most popular approach to measure performance.

Du Pont method, ROI is popular for two reasons:

- 1- It blends all ingredients of profitability, revenues, costs, and investment into a single percentage and,
- 2- It can be compared with the rate of return on opportunities, elsewhere, inside or outside the company.

ROI can provide more insight into performance when it is represented as its component,

ROI can provide more insight into performance when it is represented as its component,

$$\frac{\text{Income (Profit)}}{\text{Investment}} = \frac{\text{Income}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}}$$

Also written as,

$$ROI = \text{Return on Sales (ROS)} \times \text{Investment turnover} \\ (\text{Profit margin})$$

Or

$$= \frac{\text{Revenues} - \text{Costs}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Investment}}$$



B. How the Dupont model enhances basic return on investment calculations?

The Dupont method recognizes the two basic ingredients, in profit making.

**ROS:** Tells how much of each revenue dollar becomes income; the goal is to get higher income per revenue dollar.

The ROS measures the manager's ability to control expenses and increase revenues to improve profitability.

**Investment turnover:** tells how many revenue dollars are generated by each dollar of investment; the goal is to make each investment dollar "work harder" to generate more revenues.

Together, the two components of ROI tell a more complete story of the manager's performance and enhance top management's ability to evaluate and compare the different units;

Dupont helps managers understand how they can control ROI.

An investment SBU manager can increase ROI in basically 3 ways:

- 1] Increase sales.
- 2] Reduce expenses.
- 3] Reduce assets.

A clear understanding of these three approaches to improving the ROI figure is critical to the effective management of an investment SBU.

**Question:**

Assume sales are \$1,000,000, net income is \$40,000, and invested capital is \$250,000. if the organization's required rate of return (hurdle rate) is 12%, Is the organization meeting performance expectations using ROI?

**Solution :**

$$\frac{\$40,000}{\$1,000,000} \times \frac{\$1,000,000}{\$250,000} = \frac{\$40,000}{\$250,000} = 16\%$$

The organization is meeting their requirements based on ROI computations. The ROI of 16% exceeds the required rate of return of 12% .

## Residual income (RI):

(RI) is an accounting measure of income minus a dollar amount for required return on an accounting measure of investment.

$$RI = \text{Income} - (\text{Required rate of return} \times \text{Investment})$$

**Definition and interpretation:**

Required rate of return multiplied by the investment is *the imputed cost* of the investment.

Imputed costs are cost recognized in particular situations that are not usually recognized in financial accounting systems. In other words, RI is the income earned after the unit has paid a charge for the funds it needs to invest in the unit.

**Q.** What required rate of return should Management use to compute residual income?

The **cost of capital** ..conceptually, it should be the cost of capital based on each division's risk level.

For example, an oil exploration division would warrant a higher required rate of return than an oil refining division.

Usually, target rate in the residual income method will be less than the highest return rates actually earned by the best performing investment centers in a company.



Historical weighted average cost of capital is often used as the target or hurdle rate, however, the imported rate optimally used is the target return set by the company's management.

Companies using RI vary in the way they define income (for example, operating income or net income) and investment (for example, total assets or total assets minus current liabilities).

Concept example illustrate that RI generally is more likely than ROI to induce goal congruence.

Assume that Hospitality Inns is considering upgrading room features and furnishings at San Francisco hotel. The upgrade will increase operating income of the San Francisco hotel by \$ 70000 and increase its total assets by \$ 400,000. The ROI for the expansion is 17.5% (\$ 70000 / \$ 400000), which is attractive to Hospitality Inns because it exceeds the required rate of return (assume that the WACC for the Hospitality Inns is 12%).

By making this expansion, however, the San Francisco hotel's ROI will decrease:

$$\text{Pre - Upgrade ROI} = \frac{\$ 240.000}{\$ 1000.000} = 24 \%$$

$$\begin{aligned} \text{Post -upgrade ROI} &= \frac{\$ 240.000 + \$ 70000}{\$ 1000.000 + \$ 400000} \\ &= \frac{\$ 310.000}{\$ 1400.000} = 22.1 \% \end{aligned}$$

The annual bonus paid to the San Francisco manager may decrease if ROI affects the bonus calculation and the upgrading option is selected.

Consequently, the manager may not look upon the expansion favorably. In contrast, if the annual bonus is a function of RI, the San Francisco manager will view the expansion favorably: ( assume operating income for the San Francisco hotel is \$ 240000).

$$\text{Pre-upgrade RI} = \$ 240.000 - (0.12 \times \$ 1000000) = \$ 120000$$

$$\text{Post - upgrade RI} = \$ 310.000 - (0.12 \times \$ 1400000) = \$ 142000$$

**Goal congruence** (ensuring that subunit managers work toward achieving the company's goals) is more likely to be achieved by using RI rather than ROI as a measure of the subunit manager's performance.

#### Advantages and disadvantages of RI

##### [A] Advantages:

- Supports incentive to accept all projects with ROI greater than minimum rate of return as we explain in the previous example.
- Can use the minimum rate of return to adjust for differences in risk

##### Disadvantages:

1) Use of an absolute amount to compare performance distorts comparison of units with unequal size; larger unit of an organization may produce larger dollar volumes of residual income even though their performance is identical to a smaller unit on a percentage basis (the same problem of profit SBUs).



As an example, consider the following residual income computations for Division X and Division Y :

	<u>Division</u>	
	X	Y
Average operating assets (a) .....	\$1.000.000	\$250.000
Net operating income .....	\$ 120.000	\$ 40.000
Minimum required return: 10% X (a) ...	100.000	25.000
Residual income .....	\$ 20.000	\$ 15.000

Observe that Division X had slightly more residual income than Division Y but that Division X has \$ 1.000.000 in operating assets as compared to only \$250.000 in operating assets for Division Y. Thus,

Division X's greater residual income is probably more a result of its size than the quality of its management. In fact, it appears that the smaller division is better managed, since it has been able to generate nearly as much residual income with only one –fourth as much in operating assets to work with. This problem can be reduced to some degree by focusing on the percentage change in residual income from year to year rather than on the absolute amount of the residual income .

- 2) Reliance on computing a target rate of return may be sometimes difficult to establish.
- 3) Not as intuitive as ROI.



## Advantages and Limitations of ROI and Residual Income

ROI	<ul style="list-style-type: none"><li>• Easily understood</li><li>• Comparable to interest rates and to rates of returns on alternative investments</li><li>• Widely used</li></ul>	<ul style="list-style-type: none"><li>• Disincentive for high ROI units to invest in projects with ROI higher than the minimum rate of return but lower than the unit's current ROI.</li></ul>
Residual income	<ul style="list-style-type: none"><li>• Supports incentive to accept all projects with ROI above the minimum rate of return</li><li>• Can use the minimum rate of return to adjust for differences in risk</li><li>• Can use a different minimum rate of return for different types of assets</li></ul>	<ul style="list-style-type: none"><li>• Favors large units when the minimum rate of return is low</li><li>• Not as intuitive as ROI</li><li>• Can be difficult to obtain a minimum rate of return</li></ul>
Both ROI and residual income	<ul style="list-style-type: none"><li>• <i>Congruent</i> with top management goals for return on assets</li><li>• <i>Comprehensive financial measure.</i> Includes all elements important to top management revenues, costs, and investment</li><li>• <i>Comparability</i> ,expands top management's span of control by allowing comparison of business units</li></ul>	<ul style="list-style-type: none"><li>• <i>Can mislead strategic decision making</i>, not as comprehensive as the balanced scorecard, which includes customer satisfaction, internal processes and learning as well as financial measures, the balanced scorecard is linked directly to strategy.</li><li>• <i>Measurement issues.</i> Variations in the measurement of inventory and long-lived assets and in the treatment of nonrecurring items, income taxes. Foreign exchange effects, and the use/cost of shared assets</li><li>• <i>Short-term focus</i>; investments with long-term benefits might be neglected</li></ul>

**Economic Value added (EVA)@**

Is a more *specific* version of residual income.

It equals after-tax operating income minus the (after tax) weighted average cost of capital multiplied by total assets minus current liabilities.

EVA = After tax operating income —

[ WACC x (Total assets – Current liabilities )]

**Definition and interpretation****Economic Value Added Issues :****1. Asset Valuation Issues**

- a- The organization will capitalize research and development costs as part of its asset base along with other value adding investments in advertising and training.
- b- Balance sheet accounts are revalued to represent current cost.

**2. Income Determination**

Income may be adjusted to eliminate the impact of certain transactions and thereby create a nearly cash bases income statement

- a- Adjustments to the balance sheet impact the income statement
- b- Deferred taxes are ignored.

EVA represents the business unit's true *economic profit* primarily because a charge for the cost of equity capital is *implicit* in the cost of capital.

The cost of equity is an opportunity cost, that is, the return that could have been obtained on the best alternative investment of similar risk.

EVA is useful for determining whether a segment of a business is increasing shareholder value.

**Question :**

XYZ Manufacturing has an investment in its southeast regional plant with an investment of \$ 300.000 after adjustments for capitalization of research and development costs and revaluation of certain assets. The company's cost of capital is 12 percent, and their division produces a net income of \$ 50.000 after adjustments for current year research and development, asset revaluations, and other accounting considerations. Calculate the economic value added.

**Solution :**

After tax income		\$ 50.000
Investment	\$ 300.000	
Cost of capital	12%	
Required return		(36.000)
Economic value added		\$ 14.000

XYZ's economic value added is positive. XYZ has added to shareholder value.



**Market value added(MVA) :**

Market value added is the degree to which aggregate market value increases. Market value is computed as the number of shares outstanding times the market price of the share. Increases in market value per share and in the aggregate represent the market value added and represent another measure of performance.

**Advantages**

1) MVA reflects the evaluation of the firm's future performance by the securities markets.

**Disadvantages**

1) MVA ignores the opportunity cost of capital, Meaning that MVA may show that an investment provided a profit, but it does not consider whether or not an investment at the going market rate for a similar risk investment would have generated a greater return.





## TRANSFER PRICING

### Coordination and performance evaluation

In decentralized organizations, much of the decision-making power resides in its individual subunits. In these cases, the management control system often uses *transfer prices* to coordinate the actions of the subunits and to evaluate their performance.

### Definition

A transfer price is the price one subunit (department or division) charges for a product or service supplied to another subunit of the same organization. The products can be final products sold to outside customers or intermediate products provided to other internal units.

### Example

If, for example, a car manufacturer has a separate division that manufactures engines, the transfer price is the price the engine division charges when it transfers engines to the car assembly division.

### Motivation and performance evaluation

The transfer price creates revenues for the selling subunit (the engine division in our example) and purchase costs for the buying subunit (the assembly division in our example), affecting each subunit's operating income. These operating incomes can be used to evaluate subunit performance and to motivate their managers.

### Intermediate product

The product or service transferred between subunits of an organization is called an intermediate product. This product may either be further worked on by the receiving subunit or, if transferred from production to marketing, sold to an external customer.

### Goal congruence & management effort

As in all management control systems, transfer prices should help achieve a company's strategies and goals and fit its organization structure. In particular, they should promote *goal congruence* and a sustained high level of *management effort*. Subunits selling a product or service should be motivated to hold down their costs; subunits buying the product or service should be motivated to acquire and use inputs efficiently.

### Performance evaluation

The transfer price should also help top management evaluate the performance of individual subunits and their managers. If top management favors a high degree of decentralization, transfer prices should also promote a high degree of subunit **autonomy** in decision making. That is, a subunit manager seeking to maximize the operating income of his or her subunit should have the freedom to transact with other subunits of the company (on the basis of transfer prices) or to transact with outside parties.

## Objectives of Transfer Pricing

Transfer prices are used to accomplish certain objectives. It is against these objectives that alternative transfer-price options can be evaluated. As is the case with the financial-performance metrics discussed in part one of this chapter, we can identify three primary objectives for transfer prices:



1. **Motivate** a high level of effort on the part of subunit managers (i.e., extent to which a particular transfer-pricing method maintains divisional autonomy).
2. **Goal congruency** (i.e., achieve consistency between decisions made by managers and the goals of top management); for example, one important goal of transfer pricing is to minimize, within allowable limits, income-tax consequences of intradivisional transfers of goods and services.
3. **Reward managers fairly** for their effort and skill, and for the effectiveness of the decisions they make.

## Transfer-Pricing Methods

There are three methods for determining transfer prices:

**1. Market-based transfer prices.** Top management may choose to use the price of a similar product or service publicly listed in, say, a trade association Web site. Also, top management may select, for the internal price, the external price that a subunit charges to outside customers.

The market-price method sets the transfer price as the current price of the product in the external market. Its key advantage is objectivity; it best satisfies the arm's-length criterion desired for both management and tax purposes. A key disadvantage is that the market price, especially for intermediate products, is often not available.

Transferring products or services at market prices generally leads to optimal decisions when three conditions are satisfied:

- (1) The market for the intermediate product is perfectly competitive,
- (2) interdependencies of subunits are minimal, and
- (3) there are no additional costs or benefits to the company as a whole from buying or selling in the external market instead of transacting internally.

A perfectly competitive market exists when there is a homogeneous product with buying prices equal to selling prices and no individual buyers or sellers can affect those prices by their own actions.

By using market-base transfer prices in perfectly competitive markets, a company can achieve (1) goal congruence, (2) management effort, (3) subunit performance evaluation, and (4) subunit autonomy

In perfectly competitive markets, the **minimum price** the **selling division** is willing to accept from the buying division is the market price, because the selling division can always sell its output in the external market at that price. The **maximum price** the **buying division** is willing to pay to the selling division is the market price, because the buying division can always buy its input in the external market at that price.

**2. Cost-based transfer prices.** Top management may choose a transfer price based on the costs of producing the product in question.

Cost-based transfer prices are helpful when market prices are unavailable, inappropriate, or too costly to obtain. For example, the product may be specialized or the internal product may be different from the products available externally in terms of quality and customer service.

- Examples include
  - variable production costs,
  - variable and fixed production costs, and
  - full costs of the product.



- Full costs of the product include all production costs plus costs from the other business functions (R&D, design, marketing, distribution, and customer service).
- The costs used in cost based transfer prices can be actual costs or budgeted costs.
- Sometimes, the cost-based transfer price includes a markup or profit margin that represents a return on subunit investment.

**The variable-cost method** sets the transfer price equal to the selling unit's variable cost, with or without a mark-up. This method is desirable when the selling unit has excess capacity and the transfer price's chief objective is to satisfy the internal demand for the goods. The relatively low transfer price encourages buying internally. To motivate an internal transfer and because of equity considerations, some companies add a mark-up to variable cost when determining the transfer price. One alternative in this regard is to add a lump-sum amount to variable costs. Also, variable costs can be defined either as actual or as standard costs.

The **full-cost method** sets the transfer price equal to variable costs plus an allocated share of the selling unit's fixed costs, with or without a markup for profit. Advantages of this approach are that it is well understood and that the information is readily available in the accounting records. A key disadvantage is that it includes fixed costs, which can cause improper decision making (Chapter 11). To improve on the full-cost method, firms can use the activity-based cost method described in Chapter 5. 12 Again, costs can be defined either as actual or as standard costs.

### **Full-Cost Bases**

In practice, many companies use transfer prices based on full costs. To approximate market prices, cost-based transfer prices are sometimes set at full cost plus a margin. ***These transfer prices, however, can lead to suboptimal decisions.***

### **Advantages of full-cost-based transfer prices**

However, surveys indicate that, despite their limitations, managers prefer to use full-cost-based transfer prices because

- they represent relevant costs for long-run decisions,
- they facilitate external pricing based on variable and fixed costs, and
- they are the least costly to administer.

Using full-cost-based transfer prices requires an allocation of each subunit's fixed costs to products. Full-cost transfer pricing raises many issues.

How are indirect costs allocated to products?

Have the correct activities, cost pools, and cost-allocation bases been identified?

Should the chosen fixed-cost rates be actual or budgeted?

### **Budgeted vs. actual**

Using budgeted costs and budgeted rates

- lets both divisions know the transfer price in advance.
- It overcomes the problem of inefficiencies in actual costs getting passed along to the buying division. That's because the transfer prices are based on budgeted (efficient) costs, not what the actual costs turn out to be.



- Also, variations in the total quantity of units produced by the selling division do not affect the transfer price.

**3. Negotiated transfer prices.** In some cases, the subunits of a company are free to negotiate the transfer price between themselves and then to decide whether to buy and sell internally or deal with outside parties. Subunits may use information about costs and market prices in these negotiations, but there is no requirement that the chosen transfer price bear any specific relationship to either cost or market-price data. Negotiated transfer prices are often employed when market prices are **volatile and change occurs constantly**. The negotiated transfer price is the outcome of a bargaining process between the selling and buying subunits.

The **negotiated-price method** involves a negotiation process and sometimes arbitration between units to determine the transfer price. This method is desirable when the units have a history of significant conflict and negotiation can result in an agreed-upon price. The primary limitation is that the method can reduce the desired autonomy of the units. Further, this method may be costly and time-consuming to implement.

### Dual pricing

Firms can also use two or more methods, called **dual pricing**. For example, when numerous conflicts exist between two units, standard full cost might be used as the buyer's transfer price, while the seller might use market price.

**Dual pricing:** using two separate transfer-pricing methods to price each transfer from one subunit to another. An example of dual pricing arises when the selling division receives a full-cost based price and the buying division pays the market price for the internally transferred products. The dual-pricing system promotes goal congruence.

**Dual pricing** is not widely used in practice even though it reduces the goal incongruence associated with a pure cost-based transfer-pricing method. One concern with dual pricing is that it leads to problems in computing the taxable income of subunits located in different tax jurisdictions

**Dual pricing** is another internal price-setting alternative. For example, the seller could record the transfer to another segment at the usual market price that would be paid by an outsider. The buyer, however, would record a purchase at the variable cost of production.

- 1) Each segment's performance would be improved by the use of a dual-pricing scheme.
- 2) The company would benefit because variable costs would be used for decision-making purposes. In a sense, variable costs would be the relevant price for decision-making purposes, but the regular market price would be used for evaluation of production divisions.
- 3) Under a dual-pricing system, the profit for the company will be less than the sum of the profits of the individual segments.
- 4) In effect, the seller is given a corporate subsidy under the dual-pricing system.



5) The dual-pricing system is rarely used because the incentive to control costs is reduced. The seller is assured of a high price, and the buyer is assured of an artificially low price. Thus, neither manager must exert much effort to show a profit on segmental performance reports.

**EXHIBIT 19.9** Advantages and Limitations of Alternative Transfer-Pricing Methods

Method	Advantages	Limitations
Variable cost	<ul style="list-style-type: none"> <li>Provides the proper motivation for the manager to make the correct <i>short-term decision</i>, in which the seller's fixed costs are not expected to change. When the seller's variable cost is less than the buyer's outside price, the variable cost transfer price will cause internal sourcing, the correct decision</li> </ul>	<ul style="list-style-type: none"> <li>Inappropriate for long-term decision making in which fixed costs are relevant, and prices must cover fixed as well as variable costs</li> <li>Unfair to seller if seller is profit or investment center (i.e., no profit recognized on the transfer)</li> </ul>
Full cost	<ul style="list-style-type: none"> <li>Easy to implement</li> <li>Intuitive and easily understood</li> <li>Preferred by tax authorities over variable cost</li> <li>Appropriate for long-term decision making in which fixed costs are relevant, and prices must cover fixed as well as variable costs</li> </ul>	<ul style="list-style-type: none"> <li>Irrelevance of fixed cost in short-term decision making; fixed costs should be ignored in the buyer's choice of whether to buy inside or outside the firm</li> <li>If used, should be standard rather than actual cost (allows buyer to know cost in advance and prevents seller from passing along inefficiencies)</li> </ul>
Market price	<ul style="list-style-type: none"> <li>Helps to preserve unit autonomy</li> <li>Provides incentive for the selling unit to be competitive with outside suppliers</li> <li>Has arm's-length standard desired by taxing authorities</li> </ul>	<ul style="list-style-type: none"> <li>Intermediate products often have no market price</li> <li>Should be adjusted for any cost savings associated with an internal transfer, such as reduced selling costs</li> </ul>
Negotiated price	<ul style="list-style-type: none"> <li>Can be the most practical approach when significant conflict exists</li> <li>Is consistent with the theory of decentralization</li> </ul>	<ul style="list-style-type: none"> <li>Need negotiation rule and/or arbitration procedure, which can reduce autonomy</li> <li>Potential tax problems; might not be considered arm's length</li> <li>Can be costly and time-consuming to implement</li> <li>Resulting profitability measures (e.g., ROI or RI) are partly a function of the negotiating skills of the manager, rather than the operational performance of the business unit</li> </ul>

## Choosing the Right Transfer-Pricing Method: The Firmwide Perspective

One aspect of transfer pricing is whether the transfer price will lead to actions that benefit the organization as a whole. Looked at differently, we might ask whether the transfer price motivates an internal transfer when this benefits the firm, and whether it motivates an external sale when such a sale is warranted (from the an organization-wide perspective). To guide such a decision, three questions must be addressed:

1. Is there an outside supplier?
2. Is the seller's variable cost less than the market price?
3. Is the selling unit operating at full capacity?

Exhibit 19.10 shows the influence of each of these three factors on the choice of a transfer price and on the decision to purchase inside or out.

**First: Is there an outside supplier?** If not, there is no market price, and the best transfer price is based on cost or negotiated price. If there is an outside supplier, we must consider the relationship of the inside seller's variable cost to the market price of the outside supplier by answering the second question.





**Second: Is the seller's variable cost less than the market price?** If not, the seller's costs are likely far too high, and from the standpoint of the organization as a whole the buyer should buy outside. On the other hand, if the seller's variable costs are less than the market price, we must consider the capacity in the selling unit by answering the third question.

(Note: We focus on variable costs in this second step because commonly the transfer pricing issue is addressed as a short-term decision in which fixed costs are not expected to differ whether the internal transfer is made or is not made. In this case, the analysis is very much like the make-or-buy decision problem covered in Chapter 11—the fixed costs of the seller are irrelevant since they will not change in the short run.)

**Third: Is the selling unit operating at full capacity?** That is, will the order from the internal buyer cause the selling unit to deny other sales opportunities? If not, the selling division should provide the order to the internal buyer at a transfer price somewhere between variable cost and market price. In contrast, if the selling unit is at full capacity, we must determine and compare the cost savings of internal sales versus the selling division's opportunity cost of lost sales. If the cost savings to the inside buyer are higher than the cost of lost sales to the seller, then from the standpoint of the organization as a whole, the buying unit should buy inside, and the proper transfer price should be the market price.

#### EXHIBIT 19.10 Choosing the Right Transfer Price

	Decision to Transfer	Transfer Price
<b>First:</b> Is there an outside supplier? If there is <b>no</b> outside supply;	Buy inside	Cost or negotiated price
If there is an outside supply, answer the second question;		
<b>Second:</b> Is the seller's variable cost less than the outside price?		
If it is <b>greater than the outside price</b> , the seller must look for ways to reduce cost	Buy outside	No transfer price
If seller's variable costs are less than the outside price, answer the third question;		
<b>Third:</b> Is the selling unit operating at full capacity?		
If seller has <b>excess capacity</b> , then	Buy inside	<b>Low:</b> variable cost <b>High:</b> market price
If the seller is at full capacity		
And if the contribution of the outside sales to the entire firm is <b>greater than</b> the savings of the inside purchase	Buy outside	No transfer price
Or if the contribution of the outside sales to the entire firm is <b>less than</b> the savings of the inside purchase	Buy inside	Market price

## A GENERAL GUIDELINE FOR TRANSFER-PRICING SITUATIONS

Market conditions, the goal of the transfer-pricing system, and the criteria of goal congruence, management effort, subunit performance evaluation, and subunit autonomy (if desired), must all be considered simultaneously. The transfer price a company will eventually choose depends on the economic circumstances and the decision at hand. The following general guideline (formula) is a helpful first step in setting a minimum transfer price in many situations:

Minimum transfer price	=	Incremental cost	+	Opportunity cost
		per unit		per unit
		incurred up		to the selling subunit
		to the point of transfer		



## Definitions

**Incremental cost** in this context means the additional cost of producing and transferring the products or services.

**Opportunity cost** here is the maximum contribution margin forgone by the selling subunit if the products or services are transferred internally.

We distinguish incremental cost from opportunity cost because the financial accounting system typically records incremental cost but not opportunity cost.

For example, if the selling subunit is operating at capacity, the opportunity cost of transferring a unit internally rather than selling it externally is equal to the market price minus variable cost. That's because by transferring a unit internally, the subunit forgoes the contribution margin it could have obtained by selling the unit in the outside market.

The guideline measures a *minimum* transfer price because the selling subunit will be motivated to sell the product to the buying subunit only if the transfer price covers

- the incremental cost the selling subunit incurs to produce the product and
- the opportunity cost it forgoes by selling the product internally rather than in the external market.

## Comparison of Methods

Hence, transfer pricing should motivate managers; it should encourage goal congruence and managerial effort.

### Exhibit 22-3

#### Comparison of Different Transfer-Pricing Methods

Criteria	Market-Based	Cost-Based	Negotiated
Achieves goal congruence	Yes, when markets are competitive	Often, but not always	Yes
Motivates management effort	Yes	Yes, when based on budgeted costs; less incentive to control costs if transfers are based on actual costs	Yes
Useful for evaluating subunit performance	Yes, when markets are competitive	Difficult unless transfer price exceeds full cost and even then is somewhat arbitrary	Yes, but transfer prices are affected by bargaining strengths of the buying and selling divisions
Preserves subunit autonomy	Yes, when markets are competitive	No, because it is rule-based	Yes, because it is based on negotiations between subunits
Other factors	Market may not exist, or markets may be imperfect or in distress	Useful for determining full cost of products and services; easy to implement	Bargaining and negotiations take time and may need to be reviewed repeatedly as conditions change

**Tax factors.** A wide range of tax issues on the interstate and international levels may arise, e.g., income taxes, sales taxes, value-added taxes, inventory and payroll taxes, and other governmental charges.



## BALANCED SCORECARD

*How can an organization translate its strategy into a set of performance measures?*

*It can do so by developing a **balanced scorecard** that provides the framework for a strategic measurement and management system. The balanced scorecard measures performance from four perspectives:*

- (1) financial,*
- (2) customer,*
- (3) internal business processes, and*
- (4) learning and growth.*

### IMPLEMENTATION OF STRATEGY AND THE BALANCED SCORECARD

The balanced scorecard translates an organization's mission and strategy into a set of performance measures that provides the framework for implementing the strategy. The balanced scorecard does not focus solely on achieving financial objectives. It also highlights the nonfinancial objectives that an organization must achieve to meet its financial objectives.

The scorecard measures an organization's performance from four perspectives:

- (1) financial, (2) customer, (3) internal business processes, and (4) learning and growth.

A company's strategy influences the measures it uses to track performance in each of these perspectives. It's called the balanced scorecard because it balances the use of financial and nonfinancial performance measures to evaluate short-run and long-run performance in a single report. The balanced scorecard reduces managers' emphasis on short-run financial performance, such as quarterly earnings. That's because the nonfinancial and operational indicators, such as quarterly earnings. That's because the nonfinancial and operational indicators, such as product quality and customer satisfaction, measure changes that a company is making for the long run.

The trend in performance evaluation is the balanced scorecard approach to managing the implementation of the firm's strategy.

a. The balanced scorecard is an accounting report that connects the firm's **critical success factors** to measurements of its performance.

1) Critical success factors (CSFs) are specific, measurable financial and nonfinancial elements of a firm's performance that are vital to its competitive advantage.

b. A firm identifies its CSFs by means of a SWOT analysis that addresses internal factors (its strengths and weaknesses) and external factors (its opportunities and threats).

1) The firm's greatest strengths are its core competencies, which are functions the company performs especially well. These are the basis for its competitive advantages and strategy.

2) Strengths and weaknesses are internal resources or a lack thereof, for example, technologically advanced products, a broad product mix, capable management, leadership in R&D, modern production facilities, and a strong marketing organization.

3) Opportunities and threats arise from such externalities as government regulation, advances in technology, and demographic changes. They may be reflected in such competitive conditions as

a) Raising or lowering of barriers to entry into the firm's industry by competitors

b) Changes in the intensity of rivalry within the industry, for example, because of overcapacity or high exit barriers

c) The relative availability of substitutes for the firm's products or services

d) Bargaining power of customers, which tends to be greater when switching costs are low and products are not highly differentiated

e) Bargaining power of suppliers, which tends to be higher when suppliers are few

4) The SWOT analysis tends to highlight the basic factors of cost, quality, and the speed of product development and delivery.

c. Once the firm has identified its CSFs, it must establish specific, measurable ways for each CSF that are both relevant to the success of the firm and reliably stated.





1) Thus, the balanced scorecard varies with the strategy adopted by the firm.

a) For example, product differentiation or cost leadership either in a broad market or a narrowly focused market (a focus strategy). These measures provide a basis for implementing the firm's competitive strategy.

2) The scorecard should include **lagging indicators** (such as output and financial measures) and **leading indicators** (such as many types of nonfinancial measures).

a) The latter should be used only if they are predictors of ultimate financial performance.

3) The scorecard should permit a determination of whether certain objectives are being achieved at the expense of others.

a) For example, reduced spending on customer service may improve short term financial results at a significant cost that is revealed by a long-term decline in customer satisfaction measures.

4) By providing measures that are **nonfinancial** as well as financial, long term as well as short term, and internal as well as external, the balanced scorecard de-emphasizes short term financial results and focuses attention on CSFs.

2. A typical balanced scorecard classifies objectives into one of four perspectives on the business:

<b><u>Financial Perspective</u></b>	
<b>Objective:</b> Increase shareholder value	<b>Measures:</b> Increase in common stock price Reliability of dividend payment
<b><u>Customer Perspective</u></b>	
<b>Objective:</b> Increase customer satisfaction	<b>Measures:</b> Greater market share Higher customer retention rate Positive responses to surveys
<b><u>Internal Business Process Perspective</u></b>	
<b>Objective:</b> Improve product quality	<b>Measures:</b> Achievement of zero defects
<b>Objective:</b> Improve internal processes	<b>Measures:</b> Reduction in delivery cycle time Smaller cost variances
<b><u>Learning and Growth Perspective</u></b>	
<b>Objective:</b> Increase employee confidence	<b>Measures:</b> Number of suggestions to improve processes Positive responses to surveys
<b>Objective:</b> Increase employee competence	<b>Measures:</b> Attendance at internal and external training seminars

4. The **development and implementation** of a comprehensive balanced scorecard requires active support and participation by senior management. This involvement will in turn assure the cooperation of lower-level managers in the identification of objectives, appropriate measures, targeted results, and methods of achieving the results.

a. The scorecard should contain measures at the detail level that permits everyone to understand how his/her efforts affect the firm's results.

b. The scorecard and the strategy it represents must be communicated to all managers and used as a basis for compensation decisions.

c. The following are **problems in implementation** of the balanced scorecard approach:

1) Using too many measures, with a consequent loss of focus on CSFs

2) Failing to evaluate personnel on nonfinancial as well as financial measures

3) Including measures that will not have long-term financial benefits

4) Not understanding that subjective measures (such as customer satisfaction) are imprecise

5) Trying to achieve improvements in all areas at all times

6) Not being aware that the hypothesized connection between nonfinancial measures and ultimate financial success may not continue to be true.

Under the new system, a customer-relationship manager is responsible for each customer and negotiates long-term contracts specifying quantities and prices. The customer-relationship manager works closely with the customer and with manufacturing to specify delivery schedules for CX1 one month in advance of shipment. The schedule of customer orders and delivery dates is sent electronically to manufacturing. Completed chips are shipped directly from the manufacturing plant to customer sites. Each shipment automatically triggers an electronic invoice and customers electronically transfer funds to Chipset's bank.

Companies, such as AT&T, Banca di America e di Italia, Cigna Insurance, Cisco, PepsiCo, and Siemens Nixdorf, have realized significant benefits by reengineering their processes across design, production, and marketing (just as in the Chipset example). Reengineering has only limited benefits when reengineering efforts focus on only a single activity such as shipping or invoicing rather than the entire order-delivery process. To be successful, reengineering efforts must focus on changing roles and responsibilities, eliminating unnecessary activities and tasks, using information technology, and developing employee skills.

Take another look at Exhibit 13-1 and note the interrelatedness and consistency in Chipset's strategy. To help meet customer preferences for price, quality, and customer service, Chipset decides on a cost-leadership strategy. And to achieve cost leadership, Chipset builds internal capabilities by reengineering its processes. Chipset's next challenge is to effectively implement its strategy

### Decision Point

What is reengineering?

### Learning Objective 3

Understand the four perspectives of the balanced scorecard

... financial, customer, internal business process, and learning and growth

## Strategy Implementation and the Balanced Scorecard

Many organizations, such as Allstate Insurance, Bank of Montreal, BP, and Dow Chemical, have introduced a *balanced scorecard* approach to track progress and manage the implementation of their strategies.

### The Balanced Scorecard

The **balanced scorecard** translates an organization's mission and strategy into a set of performance measures that provides the framework for implementing its strategy.<sup>4</sup> The balanced scorecard does not focus solely on achieving short-run financial objectives. It also highlights the nonfinancial objectives that an organization must achieve to meet and sustain its financial objectives. The scorecard measures an organization's performance from four perspectives: (1) financial, the profits and value created for shareholders; (2) customer, the success of the company in its target market; (3) internal business processes, the internal operations that create value for customers; and (4) learning and growth, the people and system capabilities that support operations. A company's strategy influences the measures it uses to track performance in each of these perspectives.

Why is this tool called a balanced scorecard? Because it balances the use of financial and nonfinancial performance measures to evaluate short-run and long-run performance in a single report. The balanced scorecard reduces managers' emphasis on short-run financial performance, such as quarterly earnings, because the key strategic nonfinancial and operational indicators, such as product quality and customer satisfaction, measure changes that a company is making for the long run. The financial benefits of these long-run changes may not show up immediately in short-run earnings; however, strong improvement in nonfinancial measures usually indicates the creation of future economic value. For example, an increase in customer satisfaction, as measured by customer surveys and repeat purchases, signals a strong likelihood of higher sales and income in the future. By balancing the mix of financial and nonfinancial measures, the balanced scorecard

<sup>4</sup> See R. S. Kaplan and D. P. Norton, *The Balanced Scorecard* (Boston: Harvard Business School Press, 1996); R. S. Kaplan and D. P. Norton, *The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment* (Boston: Harvard Business School Press, 2001); R. S. Kaplan and D. P. Norton, *Strategy Maps: Converting Intangible Assets into Tangible Outcomes* (Boston: Harvard Business School Press, 2004); and R. S. Kaplan and D. P. Norton, *Alignment: Using the Balanced Scorecard to Create Corporate Synergies* (Boston: Harvard Business School Press, 2006).

For simplicity, this chapter, and much of the literature, emphasizes long-run financial objectives as the primary goal of for-profit companies. For-profit companies interested in long-run financial, environmental, and social objectives adapt the balanced scorecard to implement all three objectives.

broadens management's attention to short-run *and* long-run performance. *Never lose sight of the key point. In for-profit companies, the primary goal of the balanced scorecard is to sustain long-run financial performance. Nonfinancial measures simply serve as leading indicators for the hard-to-measure long-run financial performance.*

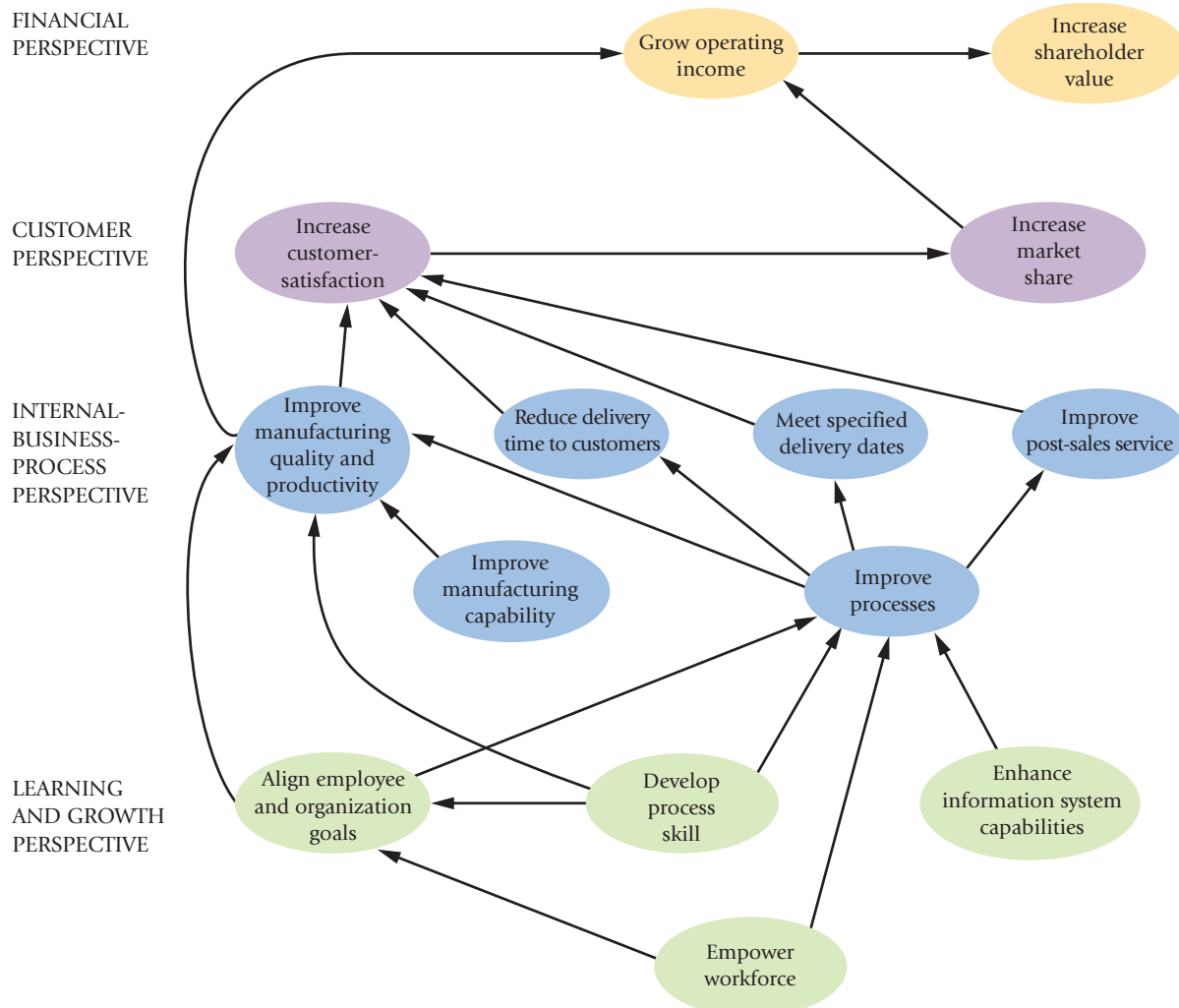
## Strategy Maps and the Balanced Scorecard

We use the Chipset example to develop strategy maps and the four perspectives of the balanced scorecard. The objectives and measures Chipset's managers choose for each perspective relates to the action plans for furthering Chipset's cost leadership strategy: *improving quality and reengineering processes.*

### Strategy Maps

A useful first step in designing a balanced scorecard is a *strategy map*. A **strategy map** is a diagram that describes how an organization creates value by connecting strategic objectives in explicit cause-and-effect relationships with each other in the financial, customer, internal business process, and learning and growth perspectives. Exhibit 13-2 presents Chipset's strategy map. Follow the arrows to see how a strategic objective affects other strategic objectives. For example, empowering the workforce helps align employee and organization goals and improves processes. Employee and organizational alignment also helps improve processes that improve manufacturing quality and productivity, reduce customer delivery time, meet specified delivery dates, and improve post-sales service, all of which increase customer satisfaction. Improving manufacturing quality and productivity

**Exhibit 13-2** Strategy Map for Chipset, Inc., for 2011



grows operating income and increases customer satisfaction that, in turn, increases market share, operating income, and shareholder value.

Chipset operates in a knowledge-intensive business. To compete successfully, Chipset invests in its employees, implements new technology and process controls, improves quality, and reengineers processes. Doing these activities well enables Chipset to build capabilities and intangible assets, which are not recorded as assets in its financial books. The strategy map helps Chipset evaluate whether these intangible assets are generating financial returns.

Chipset could include many other cause-and-effect relationships in the strategy map in Exhibit 13-2. But, Chipset, like other companies implementing the balanced scorecard, focuses on only those relationships that it believes to be the most significant.

Chipset uses the strategy map from Exhibit 13-2 to build the balanced scorecard presented in Exhibit 13-3. The scorecard highlights the four perspectives of performance: financial, customer, internal business process, and learning and growth. The first column presents the strategic objectives from the strategy map in Exhibit 13-2. At the beginning of 2011, the company's managers specify the strategic objectives, measures, initiatives (the actions necessary to achieve the objectives), and target performance (the first four columns of Exhibit 13-3).

Chipset wants to use the balanced scorecard targets to drive the organization to higher levels of performance. Managers therefore set targets at a level of performance that is achievable, yet distinctly better than competitors. Chipset's managers complete the fifth column, reporting actual performance at the end of 2011. This column compares Chipset's performance relative to target.

### Four Perspectives of the Balanced Scorecard

We next describe the perspectives in general terms and illustrate each perspective using the measures chosen by Chipset in the context of its strategy.

1. **Financial perspective.** This perspective evaluates the profitability of the strategy and the creation of shareholder value. Because Chipset's key strategic initiatives are cost reduction relative to competitors' costs and sales growth, the financial perspective focuses on how much operating income results from reducing costs and selling more units of CX1.
2. **Customer perspective.** This perspective identifies targeted customer and market segments and measures the company's success in these segments. To monitor its customer objectives, Chipset uses measures such as market share in the communication-networks segment, number of new customers, and customer-satisfaction ratings.
3. **Internal-business-process perspective.** This perspective focuses on internal operations that create value for customers that, in turn, help achieve financial performance. Chipset determines internal-business-process improvement targets after benchmarking against its main competitors using information from published financial statements, prevailing prices, customers, suppliers, former employees, industry experts, and financial analysts. The internal-business-process perspective comprises three subprocesses:
  - **Innovation process:** Creating products, services, and processes that will meet the needs of customers. This is a very important process for companies that follow a product-differentiation strategy and must constantly design and develop innovative new products to remain competitive in the marketplace. Chipset's innovation focuses on improving its manufacturing capability and process controls to lower costs and improve quality. Chipset measures innovation by the number of improvements in manufacturing processes and percentage of processes with advanced controls.
  - **Operations process:** Producing and delivering existing products and services that will meet the needs of customers. Chipset's strategic initiatives are (a) improving manufacturing quality, (b) reducing delivery time to customers, and (c) meeting specified delivery dates so it measures yield, order-delivery time, and on-time deliveries.
  - **Postsales-service process:** Providing service and support to the customer after the sale of a product or service. Chipset monitors how quickly and accurately it is responding to customer-service requests.

**Exhibit 13-3**

The Balanced Scorecard for Chipset, Inc., for 2011

Strategic Objectives	Measures	Initiatives	Target Performance	Actual Performance
<b>Financial Perspective</b>				
Grow operating income	Operating income from productivity gain	Manage costs and unused capacity	\$1,850,000	\$1,912,500
Increase shareholder value	Operating income from growth	Build strong customer relationships	\$2,500,000	\$2,820,000
	Revenue growth		9%	10% <sup>a</sup>
<b>Customer Perspective</b>				
Increase market share	Market share in communication-networks segment	Identify future needs of customers	6%	7%
Increase customer satisfaction	Number of new customers	Identify new target-customer segments	1	1 <sup>b</sup>
	Customer-satisfaction ratings	Increase customer focus of sales organization	90% of customers give top two ratings	87% of customers give top two ratings
<b>Internal-Business-Process Perspective</b>				
Improve postsales service	Service response time	Improve customer-service process	Within 4 hours	Within 3 hours
Improve manufacturing quality and productivity	Yield	Identify root causes of problems and improve quality	78%	79.3%
Reduce delivery time to customers	Order-delivery time	Reengineer order-delivery process	30 days	30 days
Meet specified delivery dates	On-time delivery	Reengineer order-delivery process	92%	90%
Improve processes	Number of major improvements in manufacturing and business processes	Organize teams from manufacturing and sales to modify processes	5	5
Improve manufacturing capability	Percentage of processes with advanced controls	Organize R&D/manufacturing teams to implement advanced controls	75%	75%
<b>Learning-and-Growth Perspective</b>				
Align employee and organization goals	Employee-satisfaction ratings	Employee participation and suggestions program to build teamwork	80% of employees give top two ratings	88% of employees give top two ratings
Empower workforce	Percentage of line workers empowered to manage processes	Have supervisors act as coaches rather than decision makers	85%	90%
Develop process skill	Percentage of employees trained in process and quality management	Employee training programs	90%	92%
Enhance information-system capabilities	Percentage of manufacturing processes with real-time feedback	Improve online and offline data gathering	80%	80%

<sup>a</sup>(Revenues in 2011 – Revenues in 2010) ÷ Revenues in 2010 = (\$25,300,000 – \$23,000,000) ÷ \$23,000,000 = 10%.

<sup>b</sup>Number of customers increased from seven to eight in 2011.



4. **Learning-and-growth perspective.** This perspective identifies the capabilities the organization must excel at to achieve superior internal processes that in turn create value for customers and shareholders. Chipset's learning and growth perspective emphasizes three capabilities: (1) information-system capabilities, measured by the percentage of manufacturing processes with real-time feedback; (2) employee capabilities, measured by the percentage of employees trained in process and quality management; and (3) motivation, measured by employee satisfaction and the percentage of manufacturing and sales employees (line employees) empowered to manage processes.

The arrows in Exhibit 13-3 indicate the *broad* cause-and-effect linkages: how gains in the learning-and-growth perspective lead to improvements in internal business processes, which lead to higher customer satisfaction and market share, and finally lead to superior financial performance. Note how the scorecard describes elements of Chipset's strategy implementation. Worker training and empowerment improve employee satisfaction and lead to manufacturing and business-process improvements that improve quality and reduce delivery time. The result is increased customer satisfaction and higher market share. These initiatives have been successful from a financial perspective. Chipset has earned significant operating income from its cost leadership strategy, and that strategy has also led to growth.

A major benefit of the balanced scorecard is that it promotes causal thinking. Think of the balanced scorecard as a *linked scorecard* or a *causal scorecard*. Managers must search for empirical evidence (rather than rely on faith alone) to test the validity and strength of the various connections. A causal scorecard enables a company to focus on the key drivers that steer the implementation of the strategy. Without convincing links, the scorecard loses much of its value.

## Implementing a Balanced Scorecard

To successfully implement a balanced scorecard requires commitment and leadership from top management. At Chipset, the team building the balanced scorecard (headed by the vice president of strategic planning) conducted interviews with senior managers, probed executives about customers, competitors, and technological developments, and sought proposals for balanced scorecard objectives across the four perspectives. The team then met to discuss the responses and to build a prioritized list of objectives.

In a meeting with all senior managers, the team sought to achieve consensus on the scorecard objectives. Senior management was then divided into four groups, with each group responsible for one of the perspectives. In addition, each group broadened the base of inputs by including representatives from the next-lower levels of management and key functional managers. The groups identified measures for each objective and the sources of information for each measure. The groups then met to finalize scorecard objectives, measures, targets, and the initiatives to achieve the targets. Management accountants played an important role in the design and implementation of the balanced scorecard, particularly in determining measures to represent the realities of the business. This required management accountants to understand the economic environment of the industry, Chipset's customers and competitors, and internal business issues such as human resources, operations, and distribution.

Managers made sure that employees understood the scorecard and the scorecard process. The final balanced scorecard was communicated to all employees. Sharing the scorecard allowed engineers and operating personnel, for example, to understand the reasons for customer satisfaction and dissatisfaction and to make suggestions for improving internal processes directly aimed at satisfying customers and implementing Chipset's strategy. Too often, scorecards are seen by only a select group of managers. By limiting the scorecard's exposure, an organization loses the opportunity for widespread organization engagement and alignment.

Chipset (like Cigna Property, Casualty Insurance, and Wells Fargo) also encourages each department to develop its own scorecard that ties into Chipset's main scorecard described in Exhibit 13-3. For example, the quality control department's scorecard has measures that its department managers use to improve yield—number of quality circles, statistical process control charts, Pareto diagrams, and root-cause analyses (see

Chapter 19, pp. 675–677 for more details). Department scorecards help align the actions of each department to implement Chipset’s strategy.

Companies frequently use balanced scorecards to evaluate and reward managerial performance and to influence managerial behavior. Using the balanced scorecard for performance evaluation widens the performance management lens and motivates managers to give greater attention to nonfinancial drivers of performance. Surveys indicate, however, that companies continue to assign more weight to the financial perspective (55%) than to the other perspectives—customer (19%), internal business process (12%), and learning and growth (14%). Companies cite several reasons for the relatively smaller weight on nonfinancial measures: difficulty evaluating the relative importance of nonfinancial measures; challenges in measuring and quantifying qualitative, nonfinancial data; and difficulty in compensating managers despite poor financial performance (see Chapter 23 for a more detailed discussion of performance evaluation). Many companies, however, are giving greater weight to nonfinancial measures in promotion decisions because they believe that nonfinancial measures (such as customer satisfaction, process improvements, and employee motivation) better assess a manager’s potential to succeed at senior levels of management. For the balanced scorecard to be effective, managers must view it as fairly assessing and rewarding all important aspects of a manager’s performance and promotion prospects.

## Aligning the Balanced Scorecard to Strategy

Different strategies call for different scorecards. Recall Chipset’s competitor Visilog, which follows a product-differentiation strategy by designing custom chips for modems and communication networks. Visilog designs its balanced scorecard to fit its strategy. For example, in the financial perspective, Visilog evaluates how much of its operating income comes from charging premium prices for its products. In the customer perspective, Visilog measures the percentage of its revenues from new products and new customers. In the internal-business-process perspective, Visilog measures the number of new products introduced and new product development time. In the learning-and-growth perspective, Visilog measures the development of advanced manufacturing capabilities to produce custom chips. Visilog also uses some of the measures described in Chipset’s balanced scorecard in Exhibit 13-3. For example, revenue growth, customer satisfaction ratings, order-delivery time, on-time delivery, percentage of frontline workers empowered to manage processes, and employee-satisfaction ratings are also important measures under the product-differentiation strategy. The goal is to align the balanced scorecard with company strategy.<sup>5</sup> Exhibit 13-4 presents some common measures found on company scorecards in the service, retail, and manufacturing sectors.

## Features of a Good Balanced Scorecard

A well-designed balanced scorecard has several features:

1. It tells the story of a company’s strategy, articulating a sequence of cause-and-effect relationships—the links among the various perspectives that align implementation of the strategy. In for-profit companies, each measure in the scorecard is part of a cause-and-effect chain leading to financial outcomes. Not-for-profit organizations design the cause-and-effect chain to achieve their strategic service objectives—for example, number of people no longer in poverty, or number of children still in school.
2. The balanced scorecard helps to communicate the strategy to all members of the organization by translating the strategy into a coherent and linked set of understandable and measurable operational targets. Guided by the scorecard, managers and employees take actions and make decisions to achieve the company’s strategy. Companies that have distinct strategic business units (SBUs)—such as consumer

<sup>5</sup> For simplicity, we have presented the balanced scorecard in the context of companies that have followed either a cost-leadership or a product-differentiation strategy. Of course, a company may have some products for which cost leadership is critical and other products for which product differentiation is important. The company will then develop separate scorecards to implement the different product strategies. In still other contexts, product differentiation may be of primary importance, but some cost leadership must also be achieved. The balanced scorecard measures would then be linked in a cause-and-effect way to this strategy.

**Exhibit 13-4****Frequently Cited  
Balanced Scorecard  
Measures****Financial Perspective***Income measures:* Operating income, gross margin percentage*Revenue and cost measures:* Revenue growth, revenues from new products, cost reductions in key areas*Income and investment measures:* Economic value added <sup>a</sup>(EVA®), return on investment**Customer Perspective**

Market share, customer satisfaction, customer-retention percentage, time taken to fulfill customers' requests, number of customer complaints

**Internal-Business-Process Perspective***Innovation Process:* Operating capabilities, number of new products or services, new-product development times, and number of new patents*Operations Process:* Yield, defect rates, time taken to deliver product to customers, percentage of on-time deliveries, average time taken to respond to orders, setup time, manufacturing downtime*Postsales Service Process:* Time taken to replace or repair defective products, hours of customer training for using the product**Learning-and-Growth Perspective***Employee measures:* Employee education and skill levels, employee-satisfaction ratings, employee turnover rates, percentage of employee suggestions implemented, percentage of compensation based on individual and team incentives*Technology measures:* Information system availability, percentage of processes with advanced controls<sup>a</sup>This measure is described in Chapter 23.

products and pharmaceuticals at Johnson & Johnson—develop their balanced scorecards at the SBU level. Each SBU has its own unique strategy and implementation goals; building separate scorecards allows each SBU to choose measures that help implement its distinctive strategy.

3. In for-profit companies, the balanced scorecard must motivate managers to take actions that eventually result in improvements in financial performance. Managers sometimes tend to focus too much on innovation, quality, and customer satisfaction as ends in themselves. For example, Xerox spent heavily to increase customer satisfaction without a resulting financial payoff because higher levels of satisfaction did not increase customer loyalty. Some companies use statistical methods, such as regression analysis, to test the anticipated cause-and-effect relationships among nonfinancial measures and financial performance. The data for this analysis can come from either time series data (collected over time) or cross-sectional data (collected, for example, across multiple stores of a retail chain). In the Chipset example, improvements in nonfinancial factors have, in fact, already led to improvements in financial factors.
4. The balanced scorecard limits the number of measures, identifying only the most critical ones. Chipset's scorecard, for example, has 16 measures, between 3 and 6 measures for each perspective. Limiting the number of measures focuses managers' attention on those that most affect strategy implementation. Using too many measures makes it difficult for managers to process relevant information.
5. The balanced scorecard highlights less-than-optimal trade-offs that managers may make when they fail to consider operational and financial measures together. For example, a company whose strategy is innovation and product differentiation could achieve superior short-run financial performance by reducing spending on R&D. A good balanced scorecard would signal that the short-run financial performance might have been achieved by taking actions that hurt future financial performance because a leading indicator of that performance, R&D spending and R&D output, has declined.

## Pitfalls in Implementing a Balanced Scorecard

Pitfalls to avoid in implementing a balanced scorecard include the following:

1. Managers should not assume the cause-and-effect linkages are precise. They are merely hypotheses. Over time, a company must gather evidence of the strength and timing of the linkages among the nonfinancial and financial measures. With experience,



organizations should alter their scorecards to include those nonfinancial strategic objectives and measures that are the best leading indicators (the causes) of financial performance (a lagging indicator or the effect). Understanding that the scorecard evolves over time helps managers avoid unproductively spending time and money trying to design the “perfect” scorecard at the outset. Furthermore, as the business environment and strategy change over time, the measures in the scorecard also need to change.

2. Managers should not seek improvements across all of the measures all of the time. For example, strive for quality and on-time performance but not beyond the point at which further improvement in these objectives is so costly that it is inconsistent with long-run profit maximization. Cost-benefit considerations should always be central when designing a balanced scorecard.
3. Managers should not use only objective measures in the balanced scorecard. Chipset’s balanced scorecard includes both objective measures (such as operating income from cost leadership, market share, and manufacturing yield) and subjective measures (such as customer- and employee-satisfaction ratings). When using subjective measures, though, managers must be careful that the benefits of this potentially rich information are not lost by using measures that are inaccurate or that can be easily manipulated.
4. Despite challenges of measurement, top management should not ignore nonfinancial measures when evaluating managers and other employees. Managers tend to focus on the measures used to reward their performance. Excluding nonfinancial measures when evaluating performance will reduce the significance and importance that managers give to nonfinancial measures.

## Evaluating the Success of Strategy and Implementation

To evaluate how successful Chipset’s strategy and its implementation have been, its management compares the target- and actual-performance columns in the balanced scorecard (Exhibit 13-3). Chipset met most targets set on the basis of competitor benchmarks in 2011 itself. That’s because, in the Chipset context, improvements in the learning and growth perspective quickly ripple through to the financial perspective. Chipset will continue to seek improvements on the targets it did not achieve, but meeting most targets suggests that the strategic initiatives that Chipset identified and measured for learning and growth resulted in improvements in internal business processes, customer measures, and financial performance.

How would Chipset know if it had problems in strategy implementation? If it did not meet its targets on the two perspectives that are more internally focused: learning and growth and internal business processes.

What if Chipset performed well on learning and growth and internal business processes, but customer measures and financial performance in this year and the next did not improve? Chipset’s managers would then conclude that Chipset did a good job of implementation (the various internal nonfinancial measures it targeted improved) but that its strategy was faulty (there was no effect on customers or on long-run financial performance and value creation). Management failed to identify the correct causal links. It implemented the wrong strategy well! Management would then reevaluate the strategy and the factors that drive it.

Now what if Chipset performed well on its various nonfinancial measures, and operating income over this year and the next also increased? Chipset’s managers might be tempted to declare the strategy a success because operating income increased. Unfortunately, management still cannot conclude with any confidence that Chipset successfully formulated and implemented its strategy. Why? Because operating income can increase simply because entire markets are expanding, not because a company’s strategy has been successful. Also, changes in operating income might occur because of factors outside the strategy. For example, a company such as Chipset that has chosen a cost-leadership strategy may find that its operating-income increase actually resulted from, say, some degree of product differentiation. *To evaluate the success of a strategy, managers and management accountants need to link strategy to the sources of operating-income increases.*

### Decision Point

How can an organization translate its strategy into a set of performance measures?

For Chipset to conclude that it was successful in implementing its strategy, it must demonstrate that improvements in its financial performance and operating income over time resulted from achieving targeted cost savings and growth in market share. Fortunately, the top two rows of Chipset's balanced scorecard in Exhibit 13-3 show that operating-income gains from productivity (\$1,912,500) and growth (\$2,820,000) exceeded targets. The next section of this chapter describes how these numbers were calculated. Because its strategy has been successful, Chipset's management can be more confident that the gains will be sustained in subsequent years.

Chipset's management accountants subdivide changes in operating income into components that can be identified with product differentiation, cost leadership, and growth. Why growth? Because successful product differentiation or cost leadership generally increases market share and helps a company to grow. Subdividing the change in operating income to evaluate the success of a strategy is conceptually similar to the variance analysis discussed in Chapters 7 and 8. One difference, however, is that management accountants compare actual operating performance over two different periods, not actual to budgeted numbers in the same time period as in variance analysis.<sup>6</sup>

## Strategic Analysis of Operating Income

The following illustration explains how to subdivide the change in operating income from one period to *any* future period. The individual components describe company performance with regard to product differentiation, cost leadership, and growth.<sup>7</sup> We illustrate the analysis using data from 2010 and 2011 because Chipset implemented key elements of its strategy in late 2010 and early 2011 and expects the financial consequences of these strategies to occur in 2011. Suppose the financial consequences of these strategies had been expected to affect operating income in only 2012. Then we could just as easily have compared 2010 to 2012. If necessary, we could also have compared 2010 to 2011 and 2012 taken together.

Chipset's data for 2010 and 2011 follow:

	2010	2011
1. Units of CX1 produced and sold	1,000,000	1,150,000
2. Selling price	\$23	\$22
3. Direct materials (square centimeters of silicon wafers)	3,000,000	2,900,000
4. Direct material cost per square centimeter	\$1.40	\$1.50
5. Manufacturing processing capacity (in square centimeters of silicon wafer)	3,750,000	3,500,000
6. Conversion costs (all manufacturing costs other than direct material costs)	\$16,050,000	\$15,225,000
7. Conversion cost per unit of capacity (row 6 ÷ row 5)	\$4.28	\$4.35

Chipset provides the following additional information:

1. Conversion costs (labor and overhead costs) for each year depend on production processing capacity defined in terms of the quantity of square centimeters of silicon wafers that Chipset can process. These costs do not vary with the actual quantity of silicon wafers processed.
2. Chipset incurs no R&D costs. Its marketing, sales, and customer-service costs are small relative to the other costs. Chipset has fewer than 10 customers, each purchasing roughly the same quantities of CX1. Because of the highly technical nature of the product, Chipset uses a cross-functional team for its marketing, sales, and customer-service activities. This cross-functional approach ensures that, although marketing, sales, and customer-service costs are small, the entire Chipset organization, including manufacturing engineers, remains focused on increasing customer satisfaction and

### Learning Objective 4

Analyze changes in operating income to evaluate strategy

... growth, price recovery, and productivity

<sup>6</sup> Other examples of focusing on actual performance over two periods rather than comparisons of actuals with budgets can be found in J. Hope and R. Fraser, *Beyond Budgeting* (Boston, MA: Harvard Business School Press, 2003).

<sup>7</sup> For other details, see R. Banker, S. Datar, and R. Kaplan, "Productivity Measurement and Management Accounting," *Journal of Accounting, Auditing and Finance* (1989): 528–554; and A. Hayzen and J. Reeve, "Examining the Relationships in Productivity Accounting," *Management Accounting Quarterly* (2000): 32–39.

**Order-filling costs**

include freight, warehousing, packing and shipping, and collections.

a discretionary-cost center and focus on planning these expenditures rather than evaluating their effectiveness. In contrast, other firms have developed extensive analyses of order-getting costs to identify the most effective activities for improving sales. Such additional analyses might consist of statistical analyses of general economic data and the firm's sales and operating data, with operational analyses consisting of ratios of sales per salesperson, sales per number of follow-ups on inquiries, and returns and allowances per product and salesperson.

A second category of marketing costs is **order-filling costs**, which include freight, warehousing, packing and shipping, and collections. These costs have a relatively clear relationship to sales volume and as a result, they can often be effectively managed as an engineered-cost center. The engineered-cost method could be implemented by using customer cost analysis as explained in Chapter 5 or by developing appropriate operating ratios—average shipping cost per item, average freight cost per sales dollar, and so on.

## Profit Centers

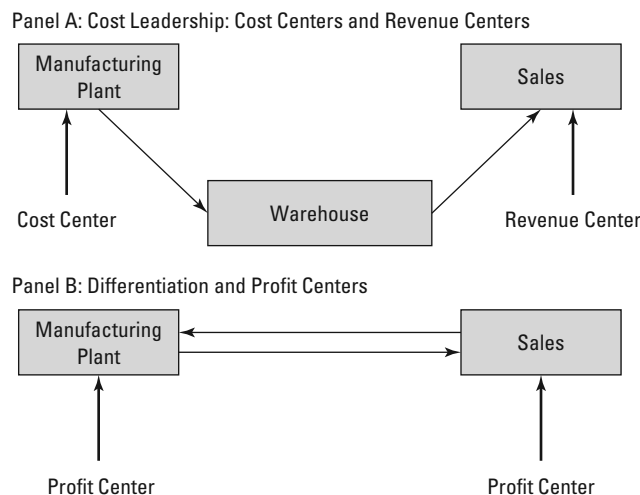
The profit center manager's goal is to earn profits. A key advantage of the profit center is that it brings the manager's incentives into congruence with those of top management: to improve the firm's profitability. Moreover, the profit center should also motivate individual managers because by earning profits, the managers are contributing directly to the firm's success. For these reasons, the profit center meets the management control objectives of motivation and decision making explained earlier.

### Strategic Role of Profit Centers

Three strategic issues cause firms to choose profit centers rather than cost or revenue centers. First, profit centers provide the incentive for the desired coordination among the marketing, production, and support functions. The handling of rush orders is a good example. A cost center would view a rush order unfavorably because of the potential added cost associated with the disruption of the production process, but a revenue center would view it favorably. If they are in separate cost and revenue centers, the production manager has little incentive to meet with the marketing manager to coordinate the rush order. In contrast, if the production unit is a profit unit, its manager accepts the order if it improves the center's profit, a decision consistent with the goals of both the production unit and top management.

This idea is illustrated in Exhibit 18.8. Panel A of Exhibit 18.8 shows a cost leadership firm in which a commodity is manufactured to certain standard quality and functionality specifications. These standards are common in the industry and firms compete primarily on price. In this case, the manufacturing plant's role is to provide product for sale at the lowest price; this can be visualized as filling the warehouse, as shown in the exhibit. The warehouse might be small if the firm's supply chain management system is effective. The function of the sales organization is to sell product from the warehouse. In effect, the sales and manufacturing units

**EXHIBIT 18.8**  
Cost Leadership,  
Differentiation, and SBUs



are logically separate and can be evaluated simply: the plant as a cost center and the sales organization as a revenue center. These performance measures align very well with the objectives of the plant and the sales organization in this case.

In contrast, see panel B of Exhibit 18.8, which reflects a firm that competes on differentiation. The arrows shown going in both directions between the plant and the sales organization indicate that this product requires extensive coordination between manufacturing and sales. An example is fashion apparel. The design and manufacturing of the apparel must be closely coordinated with sales, since styles may change frequently, and the new style preferences must be communicated from sales to the plant in a closely coordinated way. Profit centers for both the plant and the sales organization provide the right incentive in this case, as it requires both the plant and sales management to attend to both customer preferences and manufacturing costs. An alternative approach is to organize responsibility to the product lines (responsible for both manufacturing and sales) and evaluate the product lines as profit centers, rather than to separate the manufacturing and sales functions.

A second reason that firms use profit centers rather than cost centers is to motivate managers to consider their product or service as marketable to outside customers. Production departments that provide products and services primarily for other internal departments might find that they can market their products or services profitably outside the firm, or that the firm might be able to purchase the product or service at a lower price outside the firm.

The third reason for choosing profit centers is to motivate managers to develop new ways to make profit from their products and services. For example, an increasing number of companies find that service contracts (for home entertainment equipment, business equipment, appliances, and so on) provide a significant source of profit in addition to the sale of the product. In the software industry, revenues from providing service and upgrades can be as important as the software's original sales price. Coordination between marketing, production, and design is critical for the success of these efforts, and since many of these contracts are for three years or more, the expected future costs of the service must be carefully analyzed. In a profit center, managers have the incentive to develop creative new products and services because the profit center evaluation rewards the incremental profits.

### The Contribution Income Statement

A common form of profit center evaluation is the **contribution income statement**, which is based on the contribution margin developed for each profit center and for each relevant group of profit centers. The contribution income statement is illustrated in Exhibit 18.9 for Machine Tools Inc. (MTI). MTI has two operating divisions, A and B, each of which is considered a profit center. The level of detail at which the contribution income statement is developed varies depending on management's needs. For a firm with a limited number of products, the level of detail in Exhibit 18.9 is common. For a firm with several products, a

The **contribution income statement** is based on the contribution margin developed for each profit center and for each relevant group of profit centers.

**EXHIBIT 18.9** Machine Tools Inc. Contribution Income Statement (000s omitted)

	Company as a Whole	Company Breakdown into Profit Centers		Breakdown of Division B to Product-Level Profit Centers			
		Division A	Division B	Not Traceable	Product 1	Product 2	Product 3
Net revenues	\$2,000	\$600	\$1,400		\$400	\$700	\$300
Variable costs	900	200	700		100	350	250
Contribution margin	\$1,100	\$400	\$ 700		\$300	\$350	\$ 50
Controllable fixed costs	250	100	150	\$ 25	25	100	0
Controllable margin	\$ 850	\$300	\$ 550	(25)	\$275	\$250	\$ 50
Noncontrollable fixed costs	400	120	280	20	10	130	120
Contribution by profit center (CPC)	\$ 450	<u>\$180</u>	<u>\$ 270</u>	<u>\$(45)</u>	<u>\$265</u>	<u>\$120</u>	<u>\$( 70)</u>
Untraceable costs	200						
Operating income	<u>\$ 250</u>						

**The contribution by profit center (CPC)**

measures *all* costs traceable to, and therefore controllable by, the individual profit centers.

**Controllable fixed costs**

are those fixed costs that the profit center manager can influence in approximately a year or less.

**Noncontrollable fixed costs**

are those that are not controllable within a year's time, usually including facilities-related costs such as depreciation, taxes, and insurance.

**Controllable margin**

is determined by subtracting short-term controllable fixed costs from the contribution margin.

more extensive contribution income statement would be required to provide sufficient detail for management analysis.

This contribution income statement is an extension of the income statement illustrated in Exhibits 11.14 through 11.16 of Chapter 11. Chapter 11 introduces the idea of traceable fixed costs; that is, fixed costs can be traced directly to a product line or production unit. Exhibit 18.9 shows both contribution margin and contribution margin less traceable fixed costs, **contribution by profit center (CPC)**. The concept of CPC is important because it measures profit after all traceable costs and is therefore controllable by the profit center manager. CPC is a more complete and fair measure of performance than either contribution margin or operating income.

This chapter expands the contribution income statement by distinguishing controllable and noncontrollable fixed costs. **Controllable fixed costs** are fixed costs that the profit SBU manager can influence in approximately a year or less. That is, the manager typically budgets these costs in the annual budget; some of them involve contractual relationships for a year or less. Examples include advertising; sales promotion; certain engineering, data processing, and research projects; and management consulting. In contrast, **noncontrollable fixed costs** are those that are not controllable within a year's time; usually they include facilities-related costs such as depreciation, taxes, and insurance.

As illustrated in Exhibit 18.9, the firm develops a useful measure of the profit SBU manager's short-term performance by subtracting controllable fixed costs from the contribution margin to determine the **controllable margin**. In contrast, to measure the manager's performance in managing both short- and long-term costs, the CPC measure is most appropriate since it includes both short-term and long-term fixed costs.

One complication in completing the contribution income statement is that some costs that are not traceable at a detailed level are traceable at a higher level of aggregation. The untraceable costs column in the income statement represents costs traceable to division B but not traceable to any of the product lines. For example, the \$25,000 controllable fixed costs might consist of the cost of advertising that was arranged at the division level to benefit all three products, so it is not traceable to any one product.

In addition to providing useful measures of the manager's performance in managing costs, the contribution income statement can be used to determine whether a profit center should be dropped or retained, much like the contribution margin analysis in Exhibit 11.16. The analysis is now enhanced because of our ability to distinguish controllable and noncontrollable fixed costs. For example, using the analysis in Exhibit 18.9, MTI can determine that if it drops product 3, the short-term effect will be to reduce profit by \$50,000, the amount of the controllable margin. All costs involved in the determination of the controllable margin are avoidable within a period of one year. Taking the longer-term view, suppose that MTI could ultimately save an additional \$120,000 of noncontrollable fixed costs by dropping product 3. Then, in the long term, MTI can save a net of \$70,000 by dropping product 3, the amount of the contribution by CPC for product 3. The above analysis has assumed that the sales of the products are independent, that a change in sales for one product will not affect the level of sales for another product. Sales interdependencies between products must also be included in the analysis when they occur.

## Variable Costing versus Full Costing

The use of the contribution income statement often is called *variable costing* because it separates variable and fixed costs. Only variable costs are included in determining the cost of sales and the contribution margin. In contrast, full costing is a cost system that includes fixed cost in product cost and cost of sales. Full costing is the conventional costing system because it is required by financial reporting standards (generally accepted accounting principles) and by the Internal Revenue Service for determining taxable income. A key reason full costing is preferred for financial reporting is that it satisfies the matching principle; that is, in determining cost of goods sold it matches the revenues of the period with the full cost of the product. The details of full-costing systems are explained in Chapters 3 through 7.

The advantage of variable costing is that it meets the three objectives of management control systems by showing separately those costs that can be traced to, and controlled by, each profit center. In this section, we see an additional reason for using variable costing. Although income

As a result of the first two adjustments above, NOPAT will represent the total returns available to *all* providers of capital to the company. The NOPAT return therefore represents the productivity of capital employed in the business, irrespective of how investments in that capital were financed.

To calculate EVA<sup>®</sup> capital using the financing approach, you would first determine the total of interest-bearing debt plus capitalized leases. To this figure, you would add the book value of common equity (par value of stock, capital in excess of par, and retained earnings), the book value of preferred stock, and noncontrolling interests (if any). Finally, we must account for equity equivalents, such as the estimated present value of noncapitalized leases, the balance sheet amount of deferred taxes, and the LIFO reserve (if any). The resulting figure represents an estimate of EVA<sup>®</sup> capital.

### Operating Approach

The operating approach to estimating NOPAT essentially consists of starting with (cash) sales and then subtracting depreciation and recurring cash economic expenses. Next, we deduct the amount of cash operating taxes, after which time we are left with EVA<sup>®</sup> NOPAT. In estimating the amount of cash taxes paid, we adjust reported income tax expense by the change in the deferred tax account during the period. Note that interest expense, because it is a financing charge, is ignored in the determination of EVA<sup>®</sup> NOPAT. What this means, therefore, is that we must remove (that is, add back to income tax expense) the assumed income tax benefit associated with the deductibility of interest expense. Finally, to estimate EVA<sup>®</sup> NOPAT we make a number of “EE” adjustments (e.g., the effect of a change in the LIFO reserve account, and imputed interest on noncapitalized leases). The resulting profit figure should be the same as the NOPAT figure calculated under the financing approach.

Under the operating approach, EVA<sup>®</sup> capital is estimated basically by looking at the left-hand side of the entity’s balance sheet. We define EVA<sup>®</sup> capital as net working capital (NWC) plus net fixed assets (NFA), where NWC is defined as (adjusted) current assets less NIBCLS (noninterest-bearing current liabilities). Typical EE adjustments that are made to reported balance sheet data include adjustments for the LIFO reserve and for the present value of noncapitalized leases. In effect, we capitalize these leases and therefore put them on par with capitalized leases, if any, that already appear on the company’s balance sheet.

Problems 19-46 and 19-47 at the end of the chapter explore the issue of estimating EVA<sup>®</sup> using the operating approach and financing approach, respectively.<sup>11</sup>

## Using Average Total Assets

For purposes of calculating ROI, RI, and EVA<sup>®</sup>, at what point in the accounting period are assets measured? In practice, accountants use the average of the beginning and ending balances of the year for total assets in these performance metrics. The reason is that since income is applicable to the entire year, then using a simple average of the amount of total assets for the year is consistent with the period covered by the income. For example, CompuCity’s ROI for 2010 (using information from Exhibit 19.1 and assuming the investment amounts shown in the exhibit are for the year-end) would be calculated as 13.89%:

$$\text{ROI} = \frac{\$26,000}{(\$182,000 + \$192,500)/2} = 13.89\%$$

## Part Two: Transfer Pricing

### Transfer pricing

is the determination of an exchange price for a product or service when different business units within a firm exchange it.

**Transfer pricing** is the determination of an exchange price for a product or service when different business units within a firm exchange it. The products can be final products sold to outside customers or intermediate products provided to other internal units. Regardless of whether subunits of an organization are considered profit centers (Chapter 18) or investment centers, transfer prices are needed for performance-evaluation purposes. For example, without

<sup>11</sup> Additional guidance for estimating EVA<sup>®</sup> NOPAT and EVA<sup>®</sup> capital are provided in the following sources: G. Bennett Stewart III, *The Quest for Value* (New York: Harper Collins, 1995), and D. S. Young and S. F. O’Byrne, *EVA<sup>®</sup> and Value-Based Management: A Practical Guide to Implementation* (New York: McGraw-Hill, 2001).

transfer prices it would not be possible to implement the performance metrics discussed in part one of this chapter (i.e., ROI, RI, and EVA®).

## When Is Transfer Pricing Important?

Transfers of products and services between business units is most common in firms with a high degree of vertical integration. Such firms engage in a number of different value-creating activities in the value chain. Wood product, food product, and consumer product firms are examples. For instance, a computer manufacturer must determine transfer prices if it prepares the chips, boards, and other components and assembles the computer itself. (See Exhibit 2.3 in Chapter 2: Value Chain for the Computer-Manufacturing Industry.) A useful way to visualize the transfer-pricing context is to create a graphic such as the one in Exhibit 19.8 that illustrates the business units involved in the transfer of products and services and identifies them as inside or outside the firm, international or domestic. Exhibit 19.8 shows the transfers for a hypothetical computer manufacturer, High Value Computer (HVC), that purchases a key component, the x-chip, from both internal and external suppliers and purchases other components from international sources. The internal unit that manufactures x-chips sells them both internally and externally. Where it is known, the transfer price is shown in Exhibit 19.8.

The management accountant's role is to help determine the proper transfer price for the internal sales of the x-chip. We begin by considering the objectives of transfer pricing.

## Objectives of Transfer Pricing

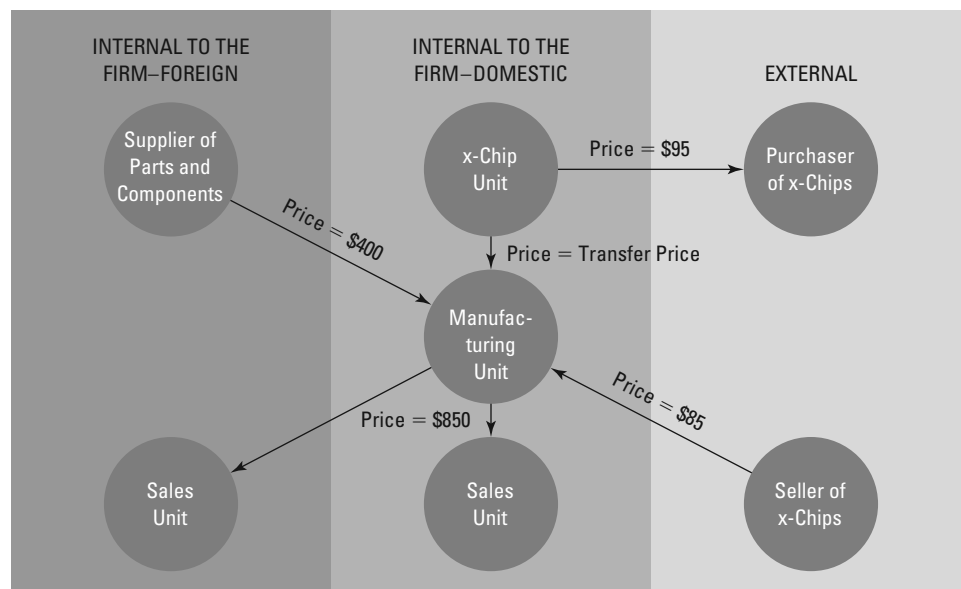
### LEARNING OBJECTIVE 4

*Explain the objectives of transfer pricing, and the advantages and disadvantages of various transfer-pricing alternatives.*

Transfer prices are used to accomplish certain objectives. It is against these objectives that alternative transfer-price options can be evaluated. As is the case with the financial-performance metrics discussed in part one of this chapter, we can identify three primary objectives for transfer prices:

1. Motivate a high level of effort on the part of subunit managers (i.e., extent to which a particular transfer-pricing method maintains divisional autonomy).
2. Goal congruency (i.e., achieve consistency between decisions made by managers and the goals of top management); for example, one important goal of transfer pricing is to minimize, within allowable limits, income-tax consequences of intradivisional transfers of goods and services.
3. Reward managers fairly for their effort and skill, and for the effectiveness of the decisions they make.

**EXHIBIT 19.8**  
Transfer Pricing Context for  
High Value Computer (HVC)



From a practical standpoint, specific transfer-pricing alternatives can also be evaluated in terms of implementation/administrative costs. In the next section we discuss several transfer-pricing methods, including advantages and disadvantages of each of these methods.

## Transfer-Pricing Methods

The **variable-cost method** sets the transfer price equal to the variable cost of the selling unit.

The **full-cost method** sets the transfer price equal to the variable cost plus allocated fixed cost for the selling unit.

The **market-price method** sets the transfer price as the current price of the product in the external market.

The **negotiated-price method** involves a negotiation process and sometimes arbitration between units to determine the transfer price.

**Dual pricing** involves the use of multiple prices for an internal transfer.

The four available methods for determining the transfer price are: variable cost, full cost, market price, and negotiated price.

The **variable-cost method** sets the transfer price equal to the selling unit's variable cost, with or without a mark-up. This method is desirable when the selling unit has excess capacity and the transfer price's chief objective is to satisfy the internal demand for the goods. The relatively low transfer price encourages buying internally. To motivate an internal transfer and because of equity considerations, some companies add a mark-up to variable cost when determining the transfer price. One alternative in this regard is to add a lump-sum amount to variable costs. Also, variable costs can be defined either as actual or as standard costs.

The **full-cost method** sets the transfer price equal to variable costs plus an allocated share of the selling unit's fixed costs, with or without a markup for profit. Advantages of this approach are that it is well understood and that the information is readily available in the accounting records. A key disadvantage is that it includes fixed costs, which can cause improper decision making (Chapter 11). To improve on the full-cost method, firms can use the activity-based cost method described in Chapter 5.<sup>12</sup> Again, costs can be defined either as actual or as standard costs.

The **market-price method** sets the transfer price as the current price of the product in the external market. Its key advantage is objectivity; it best satisfies the arm's-length criterion desired for both management and tax purposes. A key disadvantage is that the market price, especially for intermediate products, is often not available.

The **negotiated-price method** involves a negotiation process and sometimes arbitration between units to determine the transfer price. This method is desirable when the units have a history of significant conflict and negotiation can result in an agreed-upon price. The primary limitation is that the method can reduce the desired autonomy of the units. Further, this method may be costly and time-consuming to implement.

Firms can also use two or more methods, called **dual pricing**. For example, when numerous conflicts exist between two units, standard full cost might be used as the buyer's transfer price, while the seller might use market price.<sup>13</sup>

The advantages and limitations of each of the four methods are summarized in Exhibit 19.9.

### Choosing the Right Transfer-Pricing Method: The Firmwide Perspective

One aspect of transfer pricing is whether the transfer price will lead to actions that benefit the organization as a whole. Looked at differently, we might ask whether the transfer price motivates an internal transfer when this benefits the firm, and whether it motivates an external sale when such a sale is warranted (from the an organization-wide perspective). To guide such a decision, three questions must be addressed:

1. Is there an outside supplier?
2. Is the seller's variable cost less than the market price?
3. Is the selling unit operating at full capacity?

Exhibit 19.10 shows the influence of each of these three factors on the choice of a transfer price and on the decision to purchase inside or out.

**First: Is there an outside supplier?** If not, there is no market price, and the best transfer price is based on cost or negotiated price. If there is an outside supplier, we must consider the relationship of the inside seller's variable cost to the market price of the outside supplier by answering the second question.

<sup>12</sup> For an explanation of the use of activity-based costing in transfer pricing, see Robert S. Kaplan, Dan Weiss, and Eyal Desheh, "Transfer Pricing with ABC," *Management Accounting*, May 1997, pp. 20–28, and Gary J. Colbert and Barry H. Spicer, "Linking Activity-Based Costing and Transfer Pricing for Improved Decisions and Behavior," *Journal of Cost Management*, May–June 1998, pp. 20–26.

<sup>13</sup> For an illustration of dual allocation in transfer pricing, see David W. Young, "Two-Part Transfer Pricing Improves IDS Financial Control," *Healthcare Financial Management*, August 1998, pp. 56–65.



**EXHIBIT 19.9 Advantages and Limitations of Alternative Transfer-Pricing Methods**

Method	Advantages	Limitations
Variable cost	<ul style="list-style-type: none"> <li>Provides the proper motivation for the manager to make the correct <i>short-term decision</i>, in which the seller's fixed costs are not expected to change. When the seller's variable cost is less than the buyer's outside price, the variable cost transfer price will cause internal sourcing, the correct decision</li> </ul>	<ul style="list-style-type: none"> <li>Inappropriate for long-term decision making in which fixed costs are relevant, and prices must cover fixed as well as variable costs</li> <li>Unfair to seller if seller is profit or investment center (i.e., no profit recognized on the transfer)</li> </ul>
Full cost	<ul style="list-style-type: none"> <li>Easy to implement</li> <li>Intuitive and easily understood</li> <li>Preferred by tax authorities over variable cost</li> <li>Appropriate for long-term decision making in which fixed costs are relevant, and prices must cover fixed as well as variable costs</li> </ul>	<ul style="list-style-type: none"> <li>Irrelevance of fixed cost in short-term decision making; fixed costs should be ignored in the buyer's choice of whether to buy inside or outside the firm</li> <li>If used, should be standard rather than actual cost (allows buyer to know cost in advance and prevents seller from passing along inefficiencies)</li> </ul>
Market price	<ul style="list-style-type: none"> <li>Helps to preserve unit autonomy</li> <li>Provides incentive for the selling unit to be competitive with outside suppliers</li> <li>Has arm's-length standard desired by taxing authorities</li> </ul>	<ul style="list-style-type: none"> <li>Intermediate products often have no market price</li> <li>Should be adjusted for any cost savings associated with an internal transfer, such as reduced selling costs</li> </ul>
Negotiated price	<ul style="list-style-type: none"> <li>Can be the most practical approach when significant conflict exists</li> <li>Is consistent with the theory of decentralization</li> </ul>	<ul style="list-style-type: none"> <li>Need negotiation rule and/or arbitration procedure, which can reduce autonomy</li> <li>Potential tax problems; might not be considered arm's length</li> <li>Can be costly and time-consuming to implement</li> <li>Resulting profitability measures (e.g., ROI or RI) are partly a function of the negotiating skills of the manager, rather than the operational performance of the business unit</li> </ul>

**EXHIBIT 19.10 Choosing the Right Transfer Price**

	Decision to Transfer	Transfer Price
<b>First:</b> Is there an outside supplier? If there is <b>no</b> outside supply; —————→ If there is an outside supply, answer the second question;	Buy inside	Cost or negotiated price
<b>Second:</b> Is the seller's variable cost less than the outside price? <b>If it is greater than the outside price</b> , the seller must look for ways to reduce cost —————→ If seller's variable costs are less than the outside price, answer the third question;	Buy outside	No transfer price
<b>Third:</b> Is the selling unit operating at full capacity? <b>If seller has excess capacity</b> , then —————→	Buy inside	<b>Low:</b> variable cost <b>High:</b> market price
If the seller is at full capacity —————→ <div style="display: inline-block; vertical-align: middle; margin-left: 10px;">             And if the contribution of the outside sales to the entire firm is <b>greater than</b> the savings of the inside purchase —————→           </div>	Buy outside	No transfer price
<div style="display: inline-block; vertical-align: middle; margin-left: 10px;">             Or if the contribution of the outside sales to the entire firm is <b>less than</b> the savings of the inside purchase —————→           </div>	Buy inside	Market price

**Second: Is the seller's variable cost less than the market price?** If not, the seller's costs are likely far too high, and from the standpoint of the organization as a whole the buyer should buy outside. On the other hand, if the seller's variable costs are less than the market price, we must consider the capacity in the selling unit by answering the third question. (Note: We focus on variable costs in this second step because commonly the transfer-pricing issue is addressed as a short-term decision in which fixed costs are not expected to differ whether the internal transfer is made or is not made. In this case, the analysis is very much like the make-or-buy decision problem covered in Chapter 11—the fixed costs of the seller are irrelevant since they will not change in the short run.)

**Third: Is the selling unit operating at full capacity?** That is, will the order from the internal buyer cause the selling unit to deny other sales opportunities? If not, the selling division should provide the order to the internal buyer at a transfer price somewhere between variable cost and market price. In contrast, if the selling unit is at full capacity, we must determine and compare the cost savings of internal sales versus the selling division's opportunity cost of lost sales. If the cost savings to the inside buyer are higher than the cost of lost sales to the seller, then from the standpoint of the organization as a whole, the buying unit should buy inside, and the proper transfer price should be the market price.

Determining the correct transfer price and correct transfer decision can be illustrated using the High Value Computer (HVC) case (Exhibit 19.8). HVC has the option to purchase the x-chip outside the firm for \$85 or to manufacture it. Note that if the manufacturing unit of HVC purchases the x-chip from the outside supplier, it must add a component to the x-chip at a variable cost of \$5 to make the x-chip function as desired; this additional step would not be necessary if the x-chip is purchased internally. Also, note that the x-chip production unit can sell its chip outside for \$95 but there is a variable selling cost of \$2 per unit; there is no selling cost for internal transfer. The relevant information is presented in the top portion of Exhibit 19.11. The lower portion of Exhibit 19.11 shows the calculation of the relevant costs for each option.

**EXHIBIT 19.11**  
**Transfer-Pricing Example:**  
**The High Value Computer**  
**Company**

**Key assumptions:**

- The manufacturing unit can buy the x-chip inside or outside the firm.
- The x-chip unit can sell inside or outside the firm.
- The x-chip unit is at full capacity (150,000 units).
- One x-chip is needed for each computer manufactured by High Value.

**Other information:**

Sales price of computer for HVC's computer unit	\$850
Variable manufacturing cost of the computer unit (excluding x-chip) (\$400 parts and \$250 labor)	650
Variable x-chip manufacturing cost for HVC's x-chip unit	60
Price of x-chip from outside supplier, to HVC computer unit	85
Variable cost to computer unit to add needed component to outside supplier's x-chip	5
Price of x-chip from HVC's x-chip unit to outside buyer	95
Variable selling cost to the x-chip unit for outside sales	2

**Option 1: X-Chip Unit Sells Outside**

High Value manufactures 150,000 computers, using x-chips purchased for \$85 from outside supplier; High Value's x-chip unit sells 150,000 units for \$95 each to outside buyer.

**Contribution Income Statement\***  
(000s omitted)

	<b>Computer Manufacturing Unit</b>	<b>X-Chip Unit</b>	<b>Total</b>
Sales (price = \$850, \$95)	\$127,500	\$14,250	\$141,750
Less: Variable costs			
x-chip (\$85 + \$5)	13,500		13,500
Other costs (\$650, \$60 + \$2)	97,500	9,300	106,800
Contribution margin	\$ 16,500	\$ 4,950	\$ 21,450

**Option 2: X-Chip Unit Sells Inside**

High Value manufactures 150,000 computers, using x-chips purchased for \$60 (variable cost) from the inside supplier.

	<b>Computer Manufacturing Unit</b>	<b>X-Chip Unit</b>	<b>Total</b>
Sales (price = \$850, \$60)	\$127,500	\$9,000	\$136,500
Less: Variable costs			
x-chip (\$60)	9,000		9,000
Other costs (\$650, \$60)	97,500	9,000	106,500
Contribution margin	\$ 21,000	—	\$ 21,000

\*It is assumed that fixed costs will not differ for the two options; thus, these costs are excluded from the analysis.

The decline in value of Southeast Asian currencies (the Indonesian rupiah, Thai baht, Malaysian ringgit, and Sri Lanka rupee) relative to the U.S. dollar in the early 2000s appeared to be an opportunity for some Southeast Asian manufacturers to increase their exports to U.S. retailers and manufacturers. The idea is that the falling currency prices would make the Asian goods less expensive in U.S. dollars,

which would increase their appeal in the United States relative to other products and thus increase demand. Nike, which has a number of manufacturing plants in Southeast Asia, says, however, that these currency changes will not have much effect on U.S. prices. Is Nike likely to miss the potential to lower prices and increase U.S. sales? (Refer to Comments on Cost Management in Action at end of Chapter.)

A comparison of options 1 and 2 in Exhibit 19.11 shows that the firm as a whole benefits under option 1 when the manufacturing unit purchases the x-chip outside, and the x-chip unit also sells outside. The reason is that the computer manufacturing unit's savings of \$30 from internal transfer (\$30 = \$85 outside price plus \$5 for additional variable cost to add a component to the x-chip less \$60 variable cost of the internal x-chip unit) is less than the x-chip unit's opportunity cost of lost sales, \$33 (\$95 less \$60 manufacturing cost less \$2 selling cost). The opportunity cost of the x-chip unit is important since the unit is at full capacity. The \$450,000 difference between the two options is due to the net difference identified above,  $(\$33 - \$30) \times 150,000 = \$450,000$ . In summary, we can answer the same three questions for HVC in the following way:

**First: Is there an outside supplier?** High Value has an outside supplier, so we must compare the inside seller's variable costs to the outside seller's price.

**Second: Is the seller's variable cost less than the market price?** For High Value, it is, so we must consider the utilization of capacity in the inside selling unit.

**Third: Is the selling unit operating at full capacity?** For High Value, it is, so we must consider the contribution of the selling unit's outside sales relative to the savings from selling inside. Again, for High Value the contribution of the selling unit's outside sales is \$33 per unit, which is higher than the savings from selling inside (\$30). Therefore, High Value's selling unit should choose outside sales and make no internal transfers.

### General Transfer-Pricing Rule

The preceding discussion, and accompanying summary (Exhibit 19.10), may seem overwhelming to you in terms of detail and complexity. It may also seem as if the transfer-pricing decision can be mechanized according to a set of rules. This is certainly not the case because as we stated at the beginning of this section of the chapter, the ultimate transfer-pricing decision is a function of several considerations. One of these is the extent to which the transfer price motivates the "correct" decision from the standpoint of the firm as a whole. Thus, in interpreting Exhibit 19.10 you should understand that the stated rules relate to this issue.

In Chapter 11 we introduced you to the notion of relevant costs for decision making. One definition of such costs is the sum of out-of-pocket costs plus opportunity costs (if any). We can appeal to this same notion in the context of setting an appropriate transfer price. Thus, the essence of Exhibit 19.10 can be summarized by the following General Transfer-Pricing Rule:

Minimum transfer price = Incremental (i.e., out-of-pocket) cost of the producing division + Opportunity cost to the organization (if any) by making an internal transfer

From the standpoint of the firm as a whole, the preceding rule will generally ensure that the optimum decision (transfer internally or not) will be motivated by the transfer price. At the same time, we should correctly view the amount indicated by the general rule as a minimum amount that the selling division should accept. In Chapter 11, we essentially saw the same thing: in deciding whether a business should accept a special (i.e., one-time) order, the minimum specified price was the sum of out-of-pocket costs plus opportunity cost (if any). (Recall the notion of *opportunity cost*: benefit forgone by taking a particular course of action.) *Minimum* within the context of the special sales order means the *floor* below which the firm would

Effective transfer pricing can enhance a company's overall profitability, but there is a delicate balance between smart business and smart government as businesses seek to minimize tax payments and countries seek to maximize tax revenue. For those businesses without adequate transfer-planning the risk of staggering penalties imposed by the IRS is very real, as the following two examples illustrate.

- In a recent case, Symantec Corporation found itself in a \$1 billion transfer-pricing dispute with the IRS after the company acquired software maker Veritas in 2005. According to the IRS, licensing fees Veritas received from an Irish subsidiary were too low, and the company accounting records credited U.S. operations with too much of the cost of creating certain technologies. This approach increased income at the Irish subsidiary, which operated in a lower-tax environment and therefore allowed the company to lower its U.S. tax liability.
- In September 2006, GlaxoSmithKline agreed to pay the U.S. government \$3.4 billion to settle a 17-year dispute with the IRS over the company's transfers between the U.K. parent company and its American subsidiary. This was the largest settlement of a tax dispute in U.S. history. The investigations carried out by IRS found that the American subsidiary of GlaxoSmithKline overpaid its U.K. parent company for drug supplies during 1989–2005 period, mainly for its blockbuster drug, Zantac. These overpayments were meant to reduce the company's profit in the United States and thereby its tax bill. Other items under dispute included the value of marketing

in the United States, and trademarks and other intangible assets that were developed and owned by the U.K. parent company. The IRS charged the company for engaging in what is viewed as manipulative transfer pricing.

All kinds of transactions within related entities are subject to transfer-pricing rules, including raw material; finished products; and payments such as management fees, intellectual property royalties, loans, interest on loans, payments for technical assistance and know-how, and other transactions. These rules generally require intrafirm transactions to be recorded at an "arm's length" basis, which means that any transaction between two entities of the same company should be priced as if the transaction were conducted between two unrelated parties.

As the above two examples show, the penalties for not adhering to transfer-pricing rules can be very significant. In the United States, transfer-pricing rules are contained in Internal Revenue Code Section 482. Companies that violate these rules may be responsible for additional tax and interest, and depending on circumstances uncovered in an audit, the IRS can impose penalties of 20 percent or 40 percent of the underpaid tax. Furthermore, there is the chance that both countries involved in a transfer-pricing dispute would assess taxes on the same profits, effectively doubling the amount of tax owed.

**Sources:** "How to Minimize Risks of an IRS Transfer Pricing Review," *RSM Advantage* 3, no. 6 (October 2006); and, "Transfer Pricing Studies Can Lead to Planning Opportunities," *RSM McGladrey*, October 2006.

not normally consummate the deal. The same logic would apply in the transfer-pricing case. Here, opportunity cost is the contribution margin the organization forgoes, if any, by transferring internally rather than making the sale to an external party.

We conclude here by noting that estimating opportunity costs may not be an easy task, or even possible in some situations. For example, unless the product in question is traded in a purely competitive market (e.g., commodity-type products), then selling price, and therefore opportunity cost, are partly a function of the amount of internal versus external sales by the producer. These interactions complicate efforts to determine an opportunity cost associated with internal transfers. As another example, the product in question may be in the form of an intermediate product for which no organized external market exists. In such cases, the organization would have to rely on the use of one of the other transfer-pricing options.

## International Issues in Transfer Pricing

### LEARNING OBJECTIVE 5

*Discuss important international issues that arise in transfer pricing.*

Two surveys have found that more than 80 percent of multinational firms (MNCs) see transfer pricing as a major international tax issue, and more than half these firms said it was the most important issue.<sup>14</sup> Most countries now accept the Organization of Economic Cooperation and Development's model treaty, which calls for transfer prices to be adjusted using the arm's-length standard, that is, to a price that unrelated parties would have set. The model treaty is widely accepted, but the way countries apply it can differ. However, worldwide support is

<sup>14</sup> Based on information from two surveys: (1) the Ernst & Young Transfer Pricing Global Survey of 400 MNCs, as reported in the *Ernst & Young Business UpShot*, October 1997; and (2) a survey of 210 companies in the United States, United Kingdom, Japan, Australia, the Netherlands, France, and Germany, as reported in *Accounting Today*, August 21–September 10, 1995.

The question of setting the right transfer price arises in any organization where its units exchange goods or services. One example is the United States Agency for International Development (USAID). USAID ([www.usaid.gov](http://www.usaid.gov)) provides economic and humanitarian assistance in more than 100 countries including Rwanda, Afghanistan, and Kenya. Because USAID is a very large organization, it often purchases from or supplies services to other federal government agencies. Because of the frequency of this activity, USAID has developed financial

policies that explain the nature of direct and indirect costs and the acceptable methods for developing transfer prices.

**Source:** The USAID policies are set out in its Automated Directives System (ADS) ([www2.usaid.gov/policy/ads/](http://www2.usaid.gov/policy/ads/)), and the specific policies regarding transfer pricing are provided in ADS Number 306 related to interagency agreements ([www.usaid.gov/policy/ads/300/306.pdf](http://www.usaid.gov/policy/ads/300/306.pdf)), especially sections 306.3.5.7 through 306.3.6.8.

The **arm's-length standard** says that transfer prices should be set so they reflect the price that unrelated parties acting independently would have set.

The **comparable-price method** establishes an arm's-length price by using the sales prices of similar products made by unrelated firms.

The **resale-price method** is based on determining an appropriate markup based on gross profits of unrelated firms selling similar products.

The **cost-plus method** determines the transfer price based on the seller's cost plus a gross profit percentage determined by comparing the seller's sales to those of unrelated parties.

strong for an approach to limit attempts by MNCs to reduce tax liability by setting transfer prices that differ from the arm's-length standard.<sup>15</sup>

The **arm's-length standard** calls for setting transfer prices to reflect the price that unrelated parties acting independently would have set. The arm's-length standard is applied in many ways, but the three most widely used methods are (1) the comparable-price method, (2) the resale-price method, and (3) the cost-plus method. The **comparable-price method** is the most commonly used and the most preferred by tax authorities. It establishes an arm's-length price by using the sales prices of similar products made by unrelated firms.<sup>16</sup>

The **resale-price method** is used for distributors and marketing units when little value is added and no significant manufacturing operations exist. In this method, the transfer price is based on an appropriate markup using gross profits of unrelated firms selling similar products.

The **cost-plus method** determines the transfer price based on the seller's costs plus a gross profit percentage determined by comparing the seller's sales to those of unrelated parties or to unrelated parties' sales to those of other unrelated parties.

By keeping detailed records of the determination of cost, the management accountant can assist in determining the appropriate transfer price for international transfers of goods and services. The application of modern costing techniques, such as ABC (Chapter 5), would be particularly useful in terms of justifying a particular transfer price. While it is true that there are limits to the transfer price charged in multinational transactions, it is also true that minimizing worldwide tax is a legitimate business objective. By setting a (legitimate) high transfer price for goods or services transferred to a unit operating in a relatively high-tax country, a company can reduce its tax liability. Such a transfer price would increase the cost and thus reduce the income of the purchasing unit, thereby minimizing taxes for this unit. At the same time, the higher profits shown by the selling unit (as a result of the high transfer price) would be taxed at lower rates in the seller's home country.

### Other International Considerations

In addition to income tax, there are other considerations that bear upon the transfer-price decision in an international context. These include minimizing customs charges, using transfer prices to deal with currency restrictions of foreign countries, and dealing with the risk of expropriation of assets.

#### *Risk of Expropriation*

**Expropriation** occurs when a government takes ownership and control of assets that a foreign investor has invested in that country. In managing the relationship with any one country, the

**Expropriation** occurs when a government takes ownership and control of assets that a foreign investor has invested in that country.

<sup>15</sup> For further information on international taxation and transfer pricing, see B. J. Arnold and M. J. McIntyre, *International Tax Primer*, 2nd ed. (Boston: Kluwer Law International, 2002).

<sup>16</sup> In this context, *unrelated* indicates that the firm has no common ownership interest.

management accountant attempts to find a strategic balance among these sometimes conflicting objectives. When a significant risk of expropriation exists, the firm can take appropriate actions such as limiting new investment or developing improved relationships with the foreign government (e.g., by actually paying higher taxes to that government via the transfer-pricing decision).

### ***Minimization of Customs Charges***

The transfer price amount can affect the overall cost, including the customs charges, of goods imported from a foreign unit. For example, if customs charges on the parts and components imported by the domestic manufacturing unit are significant in amount, High Value Computer's relatively low transfer price on these imports would be beneficial in terms of reducing the amount of customs charges.

### ***Currency Restrictions***

As a foreign unit accumulates profits, a problem arises in some countries that limits the amount and/or timing of repatriation of these profits to the parent company. One way to deal with these restrictions is to set the transfer price so that profits accumulate at a relatively low rate. This issue therefore provides managers and the management accountant with additional planning opportunities in certain circumstances.

### **Advance Pricing Agreements**

#### **An advance pricing agreement (APA)**

is an agreement between the Internal Revenue Service (IRS) and a firm that establishes an agreed-upon transfer price.

An **advance pricing agreement (APA)** is an agreement between the Internal Revenue Service (IRS) and a firm that establishes an agreed-upon transfer price. The APA usually is obtained before the firm engages in the transfer. The APA program's goal is to resolve transfer-pricing disputes in a timely manner and to avoid costly litigation. The program supplements the dispute resolution methods already in place: administrative (IRS), judicial, and treaty mechanisms. Two-thirds of the MNCs in a recent survey indicated that they expected to use APAs in determining their transfer prices.<sup>17</sup>

## **Summary**

Return on investment (ROI) and residual income (RI) are two of the most commonly used and well-understood measures for evaluating the financial performance of investment centers.

ROI, which is defined as the ratio of operating income generated by the investment center to the level of investment in the investment center, has several disadvantages: a short-term focus, the difficulty in determining a unique measure for earnings and investment, and investment-disincentive effects.

RI is computed as the investment center's earnings less a capital charge based on a minimum desired rate of return. RI solves some, but not all, of ROI's problems. For example, both have a short-term focus, both rely on accrual-based accounting numbers, and both focus solely on financial performance.

The increased interest in the balanced scorecard (BSC) and in economic value added (EVA<sup>®</sup>) suggests that firms are adapting performance-appraisal systems for investment centers to include a long-term strategic focus.

When an organization's business units exchange goods or services internally and management desires to assess the financial performance of these units, a transfer price must be associated with the internal transfers. The management accountant can serve an important role by overseeing many objectives of transfer pricing: performance evaluation (of management and business units), tax minimization, management of foreign currencies and risks, and other strategic objectives. Common transfer-pricing methods include variable cost, full cost, market value, and negotiated price. Cost-based transfer prices can be set either at actual or at standard cost (see Chapter 14). In setting the transfer price, management considers the availability and quality of outside supply, the internal selling unit's capacity utilization, and the firm's strategic objectives in determining the proper

<sup>17</sup> For a recent survey of advance pricing agreements in 27 different countries, see Susan C. Borkowski, "Transfer Pricing Advance Pricing Agreements: Current Status by Country," *The International Tax Journal*, Spring 2000, pp. 1–16. For U.S. APA procedures, see Steven C. Wapke, Ken Milani, and Julie Joy, "The Transfer Price Is Right," *Strategic Finance*, July 1999, pp. 39–43.

transfer price. A general transfer-pricing guideline specifies that the minimum transfer price to the selling division is the sum of out-of-pocket costs plus opportunity costs to the seller (if any). Some companies use dual pricing in which two separate transfer prices are used to price an internal transfer.

Perhaps the most important aspect in determining a transfer price for international transfers is minimizing international taxes. With the efforts of various international groups, each country monitors transfer prices used in international trade. The most common transfer-pricing methods used for international trade include the comparable-price method, the resale-price method, and the cost-plus method. A firm can determine the acceptability (to various countries) of its transfer-pricing method by requesting what is called an *advance pricing agreement* (APA).

## Key Terms

advance pricing agreements (APAs), 869  
arm's-length standard, 868  
asset turnover (AT), 847  
comparable-price method, 868  
cost-plus method, 868  
economic value added, (EVA®), 859  
dual pricing, 863

expropriation, 868  
full-cost method, 863  
gross book value (GBV), 853  
historical cost of divisional assets, 852  
liquidation value, 853  
market-price method, 863  
negotiated-price method, 863  
net book value, 852

replacement cost, 853  
resale-price method, 868  
residual income (RI), 856  
return on investment (ROI), 847  
return on sales (ROS), 847  
transfer pricing, 861  
variable-cost method, 863

## Comments on Cost Management in Action

### Foreign Currency Translation, Transfer Pricing, and Profits

Nike is probably correct that U.S. prices for its products and those of its competitors will not change much. The reason is that the cost elements of its products from Southeast Asia affected by the falling local currencies, primarily labor costs, represent only a modest portion of the total product cost. Most of the cost of these manufactured products is for materials, which are imported from the United States and elsewhere outside Southeast Asia. Thus, the effect of the falling Southeast Asian currencies on *total* product cost is likely to be small; Nike estimates it to be 10 percent or less although some currencies have fallen to less than half of their previous value to the dollar.

Moreover, Southeast Asian manufacturers find that they have increased financing costs and sometimes reduced financing availability when the local currency falls and the raw materials from the United States and elsewhere become more expensive. For some of these manufacturers, the total operating and financing cost (in U.S. dollars) might even increase.

From a transfer-pricing perspective, the dramatic change in currency value presents real problems in performance evaluation. Should the local manufacturing unit be responsible for costs in U.S. currency or in terms of the local currency? Are the currency fluctuations controllable by the local managers? The answers to these questions are difficult and complex, but many companies expect their local managers to take steps to mitigate the negative effects of currency fluctuations by buying or selling options or other financial instruments, for example.

**Source:** Based on Jonathan Moore and Moon Ihlwan, "Cheaper Exports? Not So Fast," *BusinessWeek*, February 2, 1998, pp. 48–49.

## Self-Study Problems

(For solutions, please turn to the end of the chapter.)

### 1. Return on Investment (ROI) and Residual Income (RI)

Selected data from an investment center of IROL, INC. follow:

Sales	\$8,000,000
Net book value of assets, beginning	2,500,000
Net book value of assets, end	2,600,000
Net operating income	640,000
Minimum rate of return	12%



# PART 1

# Financial Planning, Performance and Control

## Section D. Internal Controls (15% - Levels A, B, and C)

Section D, **Internal Controls**, represents 15% of the exam. That does not mean you can ignore it, though. The technicalities of internal controls are important to know, especially the relevant laws that businesses are subject to and the related guidance that has been published. The Sarbanes-Oxley Act has had effects that are far reaching, and you should be familiar with its requirements.





## STUDY UNIT NINE Internal Controls I

### Introduction

#### In the Past

It is important to realize that before the publication of *Internal Control – Integrated Framework*, there had been no common agreement on what internal control was or what it consisted of. Therefore, entities had no standard to consult for determining whether their own internal control systems were effective. This lack of guidance had contributed to a good deal of confusion surrounding this important topic.

#### 1980s Treadway Commission

The events of the early 1980s also led also a private sector initiative, sponsored by five organizations, to identify the causes of fraudulent financial reporting and make recommendations to reduce its incidence. These five sponsoring organizations were known as COSO, or Committee of Sponsoring Organizations. COSO sponsored the Treadway Commission, or The National Commission on Fraudulent Financial Reporting (AICPA, IMA, IIA, AAA, FEI)

#### 1985

The commission issued its report in 1987, called Report of the National Commission on Fraudulent Financial Reporting. The 1987 report of the Treadway Commission placed responsibility for prevention and earlier detection of fraudulent financial reporting on the entity that prepares the financial reports. The commission's recommendations focused primarily on the public company.

#### 1992

As a result of this recommendation, a task force was appointed by the Treadway Commission to develop practical, broadly accepted guidelines for establishing internal control and evaluating its effectiveness. The results of this task force's work were published in a document titled *Internal Control – Integrated Framework*. The document was published in September 1992. This document has provided the framework for the internal control function in all organizations today.



## Internal control definitions and Objectives

### ➤ AICPA Definition of IC (COSO publication, *Internal Control – Integrated Framework*)

- ✓ Internal control is a process -- effected by an entity's board of directors, management, and other personnel -- designed to provide **reasonable assurance** regarding the achievement of objectives in the following categories:
  - A. Reliability of financial reporting,
    - including preparation of all published financial information. In addition to the full set of financial statements, this includes interim and condensed financial state-ments and any selected financial data from those statements, such as earnings releases, that are reported publicly.
  - B. Effectiveness and efficiency of operations, and
    - or the extent to which the company's basic business objectives are being achieved and its resources are being used effectively and efficiently. These include performance goals, profitability goals and safeguarding of resources.
  - C. Compliance with applicable laws and regulations.
    - encompassing all laws and regulations to which the company is subject.
- As a process, internal control is a **means to an end, not an end in itself**. Internal control can **provide reasonable assurance** but is **not a guarantee**. People, not policy manuals or forms, carry out internal control.

These three categories of objectives are distinct, but they do overlap. A specific control objective of a specific company could fall under more than one category. However, the three categories address different needs and they may be the direct responsibility of different managers.

Objectives numbered 2) and 3), the **financial reporting** and **compliance** objectives, are based largely on standards that are imposed by external entities, such as the SEC, financial reporting standards, and laws of the land. A company's achievement of these objectives is within the company's control, because it depends upon how activities that are within the company's control are performed. Internal control can provide **reasonable assurance** of the company's achieving these objectives.

### ➤ IMA Definition of IC

- ✓ The whole system of controls (financial and otherwise) established by management
  - A. to carry on the business of the enterprise in an orderly and efficient manner,
  - B. to ensure adherence to management policies, safeguard the assets, and
  - C. ensure as far as possible the completeness and accuracy of the records.

### ➤ Sawyer's Definition (The Father Of IA)

- ✓ The employment of all the means devised in an enterprise to promote, direct, restrain, govern, and check upon its various activities for the purpose of seeing that enterprise objectives are met. These means of control include, but are not limited to,
  - A. form of organization, policies, systems, procedures, instructions, standards, committees, charts of accounts, forecasts, budgets, schedules, reports, records, checklists, methods, devices, and internal auditing.



The internal controls of a company are an important part of its overall operations. A strong internal control system will provide many benefits to a company including:

- ✓ Lower external audit costs,
- ✓ Better control over the assets of the company, and
- ✓ Reliable information for use in decision-making.

A company with weak internal controls is putting itself at risk for employee theft, loss of control over the information relating to operations, and other inefficiencies in operations and decision-making that can damage its business.

**The concept of internal control is based on two major premises: responsibility and reasonable assurance.**

The first premise, **responsibility**, has to do with management and the board of directors being responsible for establishing and maintaining the internal control process.

While specific responsibilities for controls may be delegated to subordinates, final responsibility remains with management and the board of directors.

External auditors, internal auditors, and other parties may be concerned directly with an organization's internal control process, **but the ultimate responsibility for the control remains with management and the board of directors.**

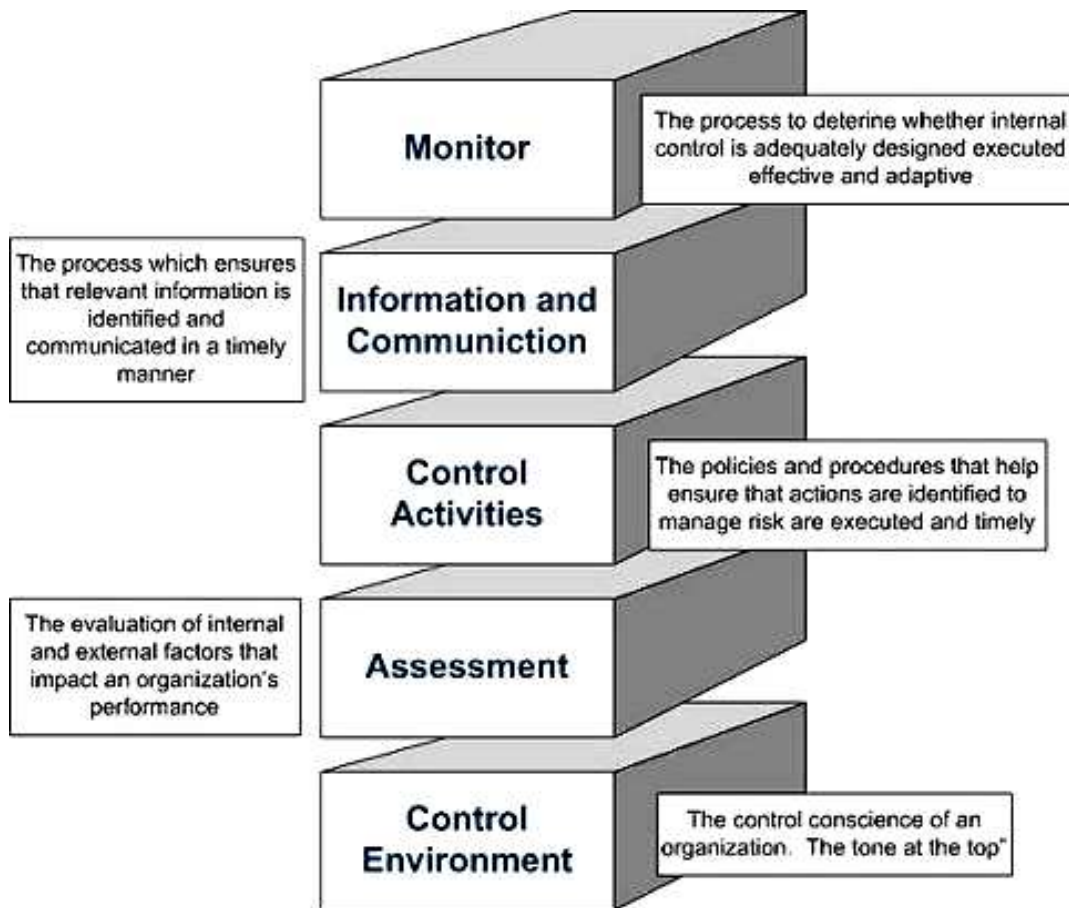
The second premise, **reasonable assurance**, has to do with the relative costs and benefits of controls. Prudent management should not spend more on controls than the benefits to be received from the controls. Management must exercise its judgment to attain reasonable assurance that its control objectives are being met.

The benefits of internal controls must always exceed the costs of implementing them. Implementing a system of absolute assurance is overly costly; thus only reasonable assurance can be obtained.

**Internal Control Components (COSO publication, Internal Control – Integrated Framework)**

1. Control Environment
2. Risk assessment
3. Control activities
4. Information and communication,
5. Monitoring.

**The mnemonic : CRIME**



COSO PYRAMID



COSO CUBE



# CONTROL ENVIRONMENT



## CONTROL ENVIRONMENT

Establishes the foundation for an internal control system by providing discipline and structure.

- ☞ The control environment factors set the tone of an organization, influencing the control consciousness of its people. The seven control environment factors, which you may remember using the

mnemonic IC HAMBO
-------------------

- I - Integrity and ethical values
- C - Commitment to competence
- H - Human resource policies and practices
- A - Assignment of authority and responsibility
- M - Management's philosophy and operating style
- B - Board of directors or audit committee participation
- O - Organizational structure

### Tone at the top

The control environment reflects the tone at the top.” Thus, it encompasses the attitudes and actions of the board of directors and managers regarding the significance of control. It provides the discipline and structure for the achievement of the objectives of internal control by influencing the control consciousness of the people within the organization.

- ☞ Top management must set the right tone, by:
  - ✓ Identifying, understanding and assessing the factors that could lead to fraudulent financial reporting;
  - ✓ Maintaining internal controls that provide reasonable assurance that fraudulent financial reporting will be prevented or detected early;
  - ✓ Developing and enforcing effective, written codes of corporate conduct;
  - ✓ Having the company's audit committee review annually the program established by management to monitor compliance with the code.

### Organizations with effective control environments set a positive “tone at the top.”

They transmit guidance both verbally and by example, communicating the entity's values, standards and code of conduct; and they follow up on violations.

There are mechanisms to encourage employee reporting of suspected violations, and disciplinary actions are taken when employees fail to report them.

They foster a “control consciousness” by setting formal and clearly communicated policies and procedures that are to be followed at all times, without exception, and which result in shared values and teamwork.

They specify the competence level needed for particular jobs; hire and retain competent people; and assign authority and responsibility appropriately.

The board of directors is responsible for setting corporate policy and for seeing that the company is operated in the best interest of shareholders.

- The attention and direction provided by the directors are critical.
- The board consists of both inside and outside directors who have adequate expertise and who are active and involved. Independence from management is critical, so that if necessary, difficult and probing questions will be raised.



### I - Integrity and ethical values

Control effectiveness is limited by the integrity and ethical values of the people who design, implement, and monitor controls.

Integrity and ethical values are essential because they affect all aspects of control.

Ethical behavior results from the entity's standards, the way they are transmitted, and how they are reinforced.

Hence, management should

- remove incentives for dishonest, illegal, or unethical behavior.
- communicate entity values and behavioral standards by means of policy statements and codes of conduct and by setting an example.

### C - Commitment to competence

Competence consists of the knowledge and abilities necessary by members of the organization to complete tasks.

Thus, management should consider the competence required for particular tasks and how that relates to necessary knowledge and abilities.

Competence in employees is essential to the proper functioning of any process of internal control.

In the final analysis, it is the quality and competence of the employees that ensure the ability to carry out the control process. No control process can function adequately without competent employees.

### H - Human resource policies and practices

**Personnel policies and practices.** This element concerns, among other things, hiring, training, evaluating, promoting, and compensating employees.

- Thus, hiring standards that emphasize education, prior experience, past achievements, and evidence of integrity and ethical behavior display a commitment to employing people who are competent and trustworthy.
- Training policies should impart to employees a knowledge of their roles and responsibilities and expectations about their conduct and performance.
- Promotions based on periodic performance appraisals should reflect a commitment to rewarding merit.

In addition to properly selecting and adequately training employees, proper supervision is necessary to ensure that duties are being carried out as assigned. Supervision becomes very important in a small firm or in other situations where segregation of duties is not possible.

#### **Job Rotation and Forced Vacations**

- ✓ Job rotation and forced vacations allow employees to check or verify the operations of other employees by performing their duties for a period of time. Several advantages may be gained by these techniques.

In the final analysis, personnel are the key components in any control system.



#### **A - Assignment of authority and responsibility**

**Assignment of authority and responsibility.** This element of the control environment pertains not only to authority and responsibility for operations but also to determination of reporting relationships and authorization of transactions.

- Other relevant concerns are the propriety of business practices, the qualifications of key employees, and the resources needed to execute duties.
- Assignment of authority and responsibility also encompasses efforts to ensure that employees know organizational objectives, how their interrelated activities contribute to achieving the objectives, and how and for what they will be accountable.

#### **M - Management's philosophy and operating style**

Philosophy and operating style embrace such characteristics as the attitude toward business risk; and the attitude and actions with respect to financial reporting, such as whether accounting estimates and the selection of accounting principles are appropriate; and attitudes toward activities of the information system, the accounting function, and employees.

**Effective control in an organization begins with and ultimately rests with management philosophy.** If management believes that controls are important, then it will see to it that effective control policies and procedures are implemented.

#### **B - Board of directors or audit committee participation**

Control consciousness is in large part a function of certain attributes of the board or audit committee:

- degree of independence from management, their experience and prestige, the commitment to oversight of activities, the propriety of their actions, the extent to which significant issues are discussed with management, and their relationship with internal and external auditors.

To be effective, the audit committee must maintain communication with an organization's internal audit function as well as with the organization's external auditors (i.e., public accountants).

#### **O - Organizational structure**

This framework should allow the organization to achieve its objectives by planning, executing, controlling, and monitoring appropriate activities.

- Key areas of authority and responsibility as well as appropriate lines of reporting are reflected in a relevant organizational structure.
- The structure should be suited to the entity's needs and be reflective of its size and activities.





## Board of directors

- A **board of directors** consists of inside members (such as officers and employees) and outside members.
  - It is the governing authority of a corporation and is therefore responsible for establishing overall corporate policy.
  - Thus, the directors have a **fiduciary duty** to the organization and its shareholders.
  - They must exercise **reasonable care** in the performance of their duties, which entails being informed about and conversant with pertinent corporate information, attending meetings, analyzing corporate financial statements, etc.
- ➞ Directors typically
- ✓ Select and remove officers
  - ✓ Determine the capital structure
  - ✓ Add, amend, or repeal bylaws
  - ✓ Initiate fundamental changes, e.g., mergers or spinoffs, which must be approved by the shareholders
  - ✓ Declare dividends
  - ✓ Set the compensation of officers and management
- ➞ An **audit committee** is a subcommittee made up of outside directors who are independent of management. Its purpose is to help keep external and internal auditors independent of management and to assure that the directors are exercising due care. The role of an audit committee or an equivalent body in strengthening the position of both internal and external auditing is now widely recognized.

### The following are some of its Characteristics and Responsibilities

- The appropriate governing authority should develop and approve a written charter describing the audit committee's duties and responsibilities.
- Reports to shareholders or other stakeholders should include a letter from the chair of the audit committee describing its responsibilities and activities.
- The audit committee should have necessary resources available.
- The audit committee should oversee the regulatory reporting process, monitor compliance with codes of conduct, review the independence of the independent public accountant.
- An audit committee composed of nonmanagement directors promotes the independence of internal as well as external auditors, especially when it selects the external audit firm and the chief audit executive (the person in the organization with responsibility for oversight of internal auditing activities). Thus, a strong audit committee insulates the auditors from influences that may compromise their independence and objectivity.
- An audit committee may also serve as a mediator of disputes between the auditors and management.



➤ Audit Committee Functions

- ✓ Selecting an external auditor and reviewing the audit fee and the engagement letter
- ✓ Reviewing the external auditor's overall audit plan
- ✓ Reviewing preliminary annual and interim financial statements
- ✓ Reviewing results of engagements performed by external auditors
- ✓ Approving the charter of the internal audit activity
- ✓ Reviewing and approving the internal audit activity's plans and resource requirements and receiving a summary of the IAA's work schedule, staffing plan, and financial budget
- ✓ Directly communicating with the chief audit executive who regularly attends and participates in meetings
- ✓ Reviewing evaluations of risk management, control, and governance processes reported by the internal auditors
- ✓ Reviewing policies on unethical and illegal procedures
- ✓ Reviewing financial statements to be transmitted to regulatory agencies
- ✓ Reviewing observations of organizational personnel
- ✓ Participating in the selection of accounting policies
- ✓ Reviewing the impact of new or proposed legislation or governmental regulations
- ✓ Reviewing the external auditor's management letter

➤ External auditors have recognized the importance of reporting to audit committees

➤ Among the matters that may be communicated are

- ✓ internal-control-related matters,
- ✓ significant accounting policies,
- ✓ management judgments and accounting estimates,
- ✓ significant audit adjustments,
- ✓ disagreements with management, and difficulties encountered during the audit.
- ✓ Fraud involving senior management or fraud that materially misstates the financial statements should be reported directly to the audit committee.

➤ The auditors also should be assured that the audit committee is adequately informed about other illegal acts coming to their attention.

➤ The control consciousness of the entity is improved if the audit committee is independent, composed of experienced and respected people, extensively involved in scrutinizing entity activities, willing to raise and pursue difficult questions with management, and in close communication with the internal and external auditors.



# Risk Assessment

Involves the identification and analysis by management of relevant risks to achieving predetermined objectives, forming a basis for determining how those risks should be managed.



## Risk Assessment

- Within the control environment, **management is responsible for the assessment of risk.**
  - ✓ All systems of internal control involve tradeoffs between cost and benefit. For this reason, no system of internal control can be said to be “100% effective.”
  - ✓ Organizations accept the fact that risk can only be **mitigated**, not eliminated
- A risk is anything that endangers the achievement of an objective. The questions should always be asked: *What could go wrong here? What assets do we need to protect?*
- Risk assessment is the process of identifying, analyzing and managing the risks that have the potential to prevent the organization from achieving its objectives. Assessment of risk involves determining the dollar value of assets that are exposed to loss ( consequences) , as well as the probability that a loss will occur (likelihood).
  - ✓ Accordingly, the **expected value** of a loss due to a risk exposure may be calculated if monetary estimates of potential losses and their probabilities can be made. This expected value is the maximum that should be spent on controls designed to minimize the risk.
- Therefore, the company's objectives must be established before the risks to them can be assessed. The risk assessment forms the basis for determining how the risks should be managed.

Example:

A firm is constructing a risk analysis to quantify the exposure of its data center to various types of threats. Which one of the following situations would represent the highest annual loss exposure after adjustment for insurance proceeds?

	Frequency of Occurrence (years)	Loss Amount	Insurance (% coverage)
a.	1	\$ 15,000	85
b.	8	75,000	80
c.	20	200,000	80
d.	100	400,000	50

Feedback: The correct answer is: 1, \$15,000, 85.

The exposure is the same as the expected loss, which is calculated by taking the “Frequency of Occurrence,” multiplying it by the loss amount, and then multiplying that by one minus the “Insurance % coverage” rate.

Expected loss = (frequency of occurrence) (loss amount) (1 - % insurance coverage)

For answer a, the expected loss =  $(1/1)(\$15,000)(1-0.85) = \$2,250$ .

For answer b, the expected loss =  $(1/8)(\$75,000)(1-0.8) = \$1,875$ .

For answer c, the expected loss =  $(1/20)(\$200,000)(1-0.8) = \$2,000$ .

For answer d, the expected loss =  $(1/100)(\$400,000)(1-0.5) = \$2,000$ .

Answer “a” represents the highest annual loss exposure after adjusting for insurance proceeds.



## Types of Risks

### External risks include

- changes in technology,
- changes in the market in which an entity operates,
- new legislation bringing new requirements,
- natural disasters,
- economic changes,
- a failure of a key supplier, or being sued, defrauded, or robbed.

### Internal risks include

- employee embezzlement accompanied by falsification of records to conceal the theft,
- lack of compliance with government regulations, or
- other illegal acts by employees, such as taking a bribe
- disruption in computer systems,
- poor management decisions,
- errors or accidents.
- Changes in management responsibilities can affect control activities; and an ineffective board or audit committee may leave openings for fraudulent actions on the part of anyone inside the organization.



## Components of Audit Risk

- The AICPA's **audit risk model** for the account balance or class of transactions level describes the components of audit risk, which is the risk that an auditor may unwittingly fail to modify his/her opinion on materially misstated financial statements. These components are defined as follows:
  - ✓ **Inherent risk (IR)**
  - ✓ **Control risk (CR)**
  - ✓ **Detection risk (DR)**
  - ✓ **Total audit risk (AR) = IR x CR x DR**
- **Inherent risk (IR)** is the susceptibility of a financial statement assertion to material misstatement in the absence of related controls.
  - ✓ This risk is greater for some assertions than for others, e.g., cash has a greater inherent risk than property, plant, and equipment.
- **Control risk (CR)** is the risk that a possible material misstatement of an assertion will not be prevented or detected by the related controls in a timely manner.
  - ✓ This risk depends on the effectiveness of the design and operation of those controls.
    - However, control risk cannot be eliminated because of the **inherent limitations** of internal control,
      - for example, the possibility of simple error or mistake due to faulty human judgment, the ability of management to override internal control inappropriately, the potential for circumventing internal control as a result of collusion by two or more people, or an unfavorable relationship of the cost of control to its benefits.
- **Detection risk (DR)** is the risk that a material misstatement of an assertion will not be detected by the auditor,
  - ✓ for example, because the auditor merely sampled the account balance or class of transactions, selected an inappropriate audit procedure, misapplied an audit procedure, or misinterpreted the audit results.
    - 1) The level of detection risk is the only one of the three subject to the auditor's direct control.



## Control Procedures

Control procedures are implemented to manage or limit risk in accordance with the entity's risk assessments whenever risk exposures exist that threaten loss of assets or misstatements of accounting or management information.



## Control Procedures

Control procedures (control activities) are designed and placed in operation to ensure that management's directives are executed.

- Hence, they should include the requisite steps to respond to the risks that threaten the attainment of organizational objectives.
- For this purpose, controls should be suitably designed to prevent or detect unfavorable conditions arising from particular risk exposures.
- They should also be placed in operation and operate effectively. If controls are not always in force, then, no matter how effective their design, they cannot operate effectively.
- **Classifications of Control Activities**
- There are five classifications of control activities based on when they occur within the activity being carried out and what their objective is. The types of controls and examples of them are:
  - ✓ **Preventive**, to avoid the occurrence of an unwanted event
  - ✓ **Detective**, to discover the occurrence of an unwanted event,
  - ✓ **Directive**, to ensure the occurrence of a desirable event
  - ✓ **Corrective**, to correct an occurrence of an undesirable event
  - A control activity can also be **compensating**, to compensate for what appears to be a weakness in controls.

## Preventive controls

**Meaning** : to avoid the occurrence of an unwanted event

- Preventive controls are usually more cost beneficial than detective or corrective controls.
- In general, preventive controls are more important than detective controls because the benefits typically outweigh the costs.

**Examples** :

Preventive controls dependent upon functions or people performing their roles effectively may include:

- Segregation of duties, (which is covered in more detail later in this section).
- suitable authorization of transactions,
- Checking credit worthiness of customers before goods are shipped.
- Supervisory review, such as a supervisor approving a purchase transaction.
- Dual control, such as two signers on every check.
- Physical controls to safeguard assets such as equipment, inventories, securities, cash and other assets.

## Detective controls

**Meaning** : to detect the occurrence of an unwanted event

Detective controls are intended to back up preventive controls by detecting errors after they have occurred.

Detective controls complement preventive controls and are essential components of a well-designed control system. In some cases, detective controls may be less costly than preventive controls because random transactions, rather than every transaction, can be examined.





**Examples :**

- Reconciliation of bank statements is an example of a detective control over cash assets.
- checking for missing document numbers in prenumbered documents,
- Top-level reviews of performance reports with variances from budgets, forecasts, prior periods and competitors.
- Managers of various activities review direct functional performance reports.

## **Directive controls**

**Meaning :** To ensure (encourage) the occurrence of a desirable event

**Examples :**

- Managers of a construction company instructing project managers to hire local workers in order to create a favorable image in the communities in which it operates.
- While the focus of preventive, detective, and corrective controls is on the prevention, detection, and correction of negative results, directive controls are designed to produce positive results. For example, a firm may have a policy to use local vendors as often as possible.
- Directive controls may be intended to create a favorable image for the company in the community.

## **Corrective controls**

**Meaning :** To correct an undesirable event that has already occurred

**Examples :**

Corrective procedures put in place to remedy problems discovered by detective controls, such as steps taken to identify the cause of the problem, to correct errors arising from the problem, and to modify the processing system to minimize future occurrences of the problem.

## **Compensating controls**

**Meaning :** To compensate for an internal control weakness by doing more of other controls

**Compensating controls** Compensating controls are designed to compensate for shortcomings elsewhere in the control structure.

Compensating controls replace the normal controls, such as segregation of duties, when the latter cannot feasibly be implemented. Compensating controls may include redundancy.

**Examples :**

- For example, a bank reconciliation process performed by a party who is independent of accounts payable can compensate for a number of flaws in the controls over these types of transactions.



Additionally, control activities can be grouped according to the three categories of **objectives**:

- Reliability of financial reporting
- Efficiency and effectiveness of operations
- Compliance with applicable laws and regulations
- Safeguarding of assets

#### **Reliability of financial reporting**

- Management has legal and professional responsibility to ensure that information in financial statements is fairly represented and prepared in accordance with generally accepted accounting principles (GAAP). Examples of controls for reliability of financial reporting include control procedures for budgeting, internal performance reports, accounting classes to which transactions are posted, and control over account balances.
- These controls have importance not only for financial reporting but also for ensuring that management decisions are based upon accurate information.

#### **Safeguarding Assets**

- The objective of safeguarding assets requires that access be limited to authorized personnel.
  - ✓ Access includes both direct physical access and indirect access through the preparation or processing of documents that authorize the use or disposition of assets.
- Examples Controls to safeguard assets:
  - ✓ The various means of segregation of duties.
  - ✓ The use of cash registers, establishment of a lockbox system for collecting cash receipts from customers, e.g., direct deposit in a bank, intact deposit of daily receipts, and custody of cash by the treasury function.
  - ✓ Controls to prevent improper granting of credit, approval of credit memos by persons other than sales agents, and approval of write-offs of uncollectible by a person independent of the credit manager or the accounts receivable function.
  - ✓ Use of sequentially pre-numbered forms accounted for by an independent third party to permit detection of unrecorded and unauthorized transactions;
  - ✓ requiring proper documentation, that is, purchase order, supplier's invoice, and receiving report, before authorization of payment for goods received; and cancelation of vouchers and supporting documents to prevent duplicate payments.
  - ✓ Preparation of payroll from time cards approved by line supervisors; distribution of paychecks by the treasury function, not line supervisors; and custody of unclaimed checks by an independent party.
  - ✓ Custody of securities by the treasury function, the presence of at least two authorized persons when the safe deposit box is opened, recording and reconciliation of identifying information about securities, and registration in the name of the owner.
  - ✓ Controls over excess use of materials in production; custody of inventories by the storekeeper, with proper documentation of transfers; and perpetual inventory records.
  - ✓ Restriction of access to property, plant, and equipment and periodic inspections by internal auditing.



- ✓ The controls over computer processing.
- ✓ Physical measures taken to protect assets from natural disasters (e.g., floods, wind damage, or earthquakes).
- ✓ **Reconciliation of recorded accountability with assets.** The purpose of comparing recorded accountability with assets is to determine whether the actual assets agree with the recorded accountability.
  - ✓ Typical examples of this comparison include cash and securities counts, bank reconciliations, and physical inventories.
  - ✓ A comparison revealing that the assets do not agree with the recorded accountability provides evidence of unrecorded or improperly recorded transactions.
    - ✓ The converse, however, does not necessarily follow. For example, agreement of a cash count with the recorded balance does not provide evidence that all cash received has been properly recorded.
- ✓ When assets are susceptible to loss through errors or fraud, the comparison with recorded accountability should be made independently. An independent reconciliation or check, performed by someone other than the person responsible for the initial preparation, increases the likelihood that the control will be effective because, in the absence of collusion, the same person will not be in the position to perpetrate and conceal an error or fraud in the course of his/her normal duties.
  - ✓ The frequency of such comparisons for the purpose of safeguarding assets depends on the nature and amount of the assets involved and the cost of making the comparison.
  - ✓ For example, it may be reasonable to count cash daily, but not reasonable to take a physical inventory at that interval. However, a daily inventory of products in the custody of route salesmen, for example, may be necessary as a means of determining their accountability for sales. Similarly, the value and vulnerability of some products may make frequent complete inventories worthwhile.

#### **Compliance with applicable laws and regulations**

- ➡ Organizations are required to follow many laws and regulations; these are imposed upon the organization from the outside. The firm establishes internal controls in the form of policies, plans, and procedures to ensure planned, systematic, and orderly operation.
- ➡ Failure to comply with such controls jeopardizes the firm's compliance with the associated laws and regulations.



## Segregation of Duties

Two of the main elements of internal control that you need to understand are the **segregation of duties** and the **elements that make up the components of internal control**. It is important to know these topics, and the other internal control topics, not only from an academic standpoint (definitions and lists, for example) but also from a practical application standpoint. The answers to the application related questions can be very difficult because it may seem that all of the choices are good controls or none of the duties are ones that can be performed by the same person. However, when you face these questions, don't spend too much time thinking about any particular one because each has the same value, and therefore there is no benefit to figuring out a hard question versus answering a simple one.



## Segregation of Duties

Duties need to be divided among various employees to reduce the risk of errors or inappropriate activities. This ensures that no single individual is given too much responsibility so that no employee is in a position to both perpetrate and conceal irregularities.

Note: Different people must always perform the following four functions:

Authorizing a transaction.

Recording the transaction,  
preparing source documents,  
maintaining journals.

Keeping physical custody of the related asset

The periodic reconciliation of the physical assets to the recorded amounts for those assets.

- Establishing and maintaining internal control is an important management responsibility. In establishing specific internal controls, some of the specific objectives management may wish to consider include the following:
  - Transactions are **executed** in accordance with management's general or specific **authorization**.
  - Transactions are **recorded** as necessary to
    - Permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements
  - **Custody of assets** is permitted only in accordance with management's authorization.
  - The recorded accountability for assets is **reconciled** with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

Be aware, however, that segregation of duties does not guarantee that fraud will not occur.

Two or more employees could collude with one another to commit fraud, covering for one another and, presumably, sharing the proceeds.

Note: **Collusion** occurs when two or more individuals work together to overcome the internal control system and perpetrate a fraud. When two or more people work together, they are able to get around the segregation of duties that may have been set out.



## **Segregation of Duties Example (based on ICMA suggested reading list):**

### **Segregation of Authorization from Recording of Transactions**

Segregation of authorization of transactions from recording of transactions reduces opportunities for errors and irregularities by establishing independent accountability for authorization functions. If each function in an organization kept its own records, there would be no accountability. There would be no basis for an independent reconciliation and analysis of a function's activities because there would be no assurances that all transactions have been recorded. In order to ensure unbiased information, record-keeping functions are usually centralized in a separate function headed by the controller.

- ➡ For example, in a sales order application, the sales manager authorizes credit sales. A copy of the sales order form is sent to the warehouse to authorize the shipment of goods. If notice of the shipment is subsequently sent only to the sales manager, then the sales manager is accountable for his or her own performance. The sales manager is thus in a position to perpetrate errors and irregularities in the normal course of his or her duties. Perhaps he or she has authorized a shipment to a relative or friend. When notice of the shipment is received, the sales manager simply may destroy it or ignore it rather than forward it to billing for collection.

### **Segregation of Authorization from Custody of Assets**

Segregation of authorization of transactions from custody of assets reduces opportunities for errors and irregularities by establishing independent accountability for the use (custody) of assets. Authorization of activities is communicated to those who have custody of assets and simultaneously communicated to the record-keeping function (i.e., accounting). Those charged with the custody of assets subsequently communicate the results of activity (i.e., transactions) to the record-keeping function. Reconciliation of these data with the authorizations that were received from an independent function provides accountability for both the authorization and the subsequent use of assets.

- ➡ For example, in a sales order application, the sales manager authorizes credit sales. A copy of the sales order form is sent to the warehouse to authorize the shipment of goods. Another copy of the sales order form is sent to accounting. Notice of the shipment is subsequently sent to accounting. Reconciliation of shipment data with the authorizations that were received from an independent function provides accountability for both the authorization and the subsequent use of assets. Notice of shipment without a matching authorization indicates unauthorized shipments. Notice of authorization without subsequent shipment indicates ineffectiveness or inefficiency in completing sales transactions.

### **Segregation of Recording Transactions from Custody of Assets**

Segregation of recording transactions from custody of assets reduces opportunities for errors and irregularities by establishing independent accountability for the use of assets. Authorization of activities is communicated to those who have custody of assets and simultaneously communicated to the record-keeping function (i.e., accounting). Those charged with the custody of assets subsequently communicate the results of activity (i.e., transactions) to the record-keeping function. Reconciliation of these data with the authorizations that were received from an independent function provides accountability for both the authorization and the subsequent use of assets.



- If there is no segregation of duties between recording transactions from custody of assets, then those charged with the custody of assets are accountable for their own performance. There would be no basis for an independent reconciliation and analysis of a function's activities because there would be no assurances that all transactions have been recorded. The persons charged with the custody of assets are in a position to perpetrate errors and irregularities in the normal course of their duties by omitting records or falsifying entries into the records. In the preceding sales example, goods may be shipped by those who have custody of assets without authorization and without recording the shipment because there is no independent accountability for shipments.

**Examples of segregation of duties include separating the incompatible functions**

**In the sales-receivables cycle:**

- separating the functions of authorization of customer credit levels, authorization of a sale to a customer, custody of product, custody of cash, record keeping, and reconciliation of accounts receivable records to cash receipts.
- One person has authority to adjust accounts receivable, while a different person posts payments on customer accounts.
  - (Without segregation here, one person could divert cash receipts and then falsify the account balances of the customers who paid the cash in order to conceal the diversion.)
- One person has custody of cash receipts, while a different person has the authority to authorize account write-offs.
  - (Without segregation, one person could authorize a false write-off while diverting the collection on the account.)
- One person is responsible for preparing the bank deposit, while a different person reconciles the checking account.
  - (Without segregation, one person could divert cash receipts and cover the activity by creating "reconciling items" in the account reconciliation.)

**In the purchases-payables cycle:**

- separating the functions of the initiation of a purchase, receipt and checking in of the merchandise, authorization to pay the vendor, custody of the merchandise, record keeping for the merchandise, and verification that the amounts of the merchandise on hand match the amounts in the books.
  - One person authorizes issuance of purchase orders, while a different person is responsible for recording receipt of inventory. (Without such segregation, one person could issue a purchase order to a fictitious vendor using a rented post office box, then prepare a fictitious receiving record and mail an invoice to the company using a post office box personally rented for that purpose, resulting in the company's paying for something it never ordered or received.)

**In the payroll cycle:**

- separating the functions of authorization of pay rates and deductions, hiring and termination of employees, payroll preparation, check distribution, and reconciliation of checks cut and cleared to the payroll register and HR records.

**In the production cycle:**

- separating the functions of planning production and inventory levels, inventory custody, inventory recording, cost accounting, and reconciliation of materials requisitions to production reports.



# Information & Communication



Components of Internal Control

Supports all other control components by communicating control responsibilities to employees; provides information in a form and time frame that allow people to carry out their duties.





## Information & Communication

The fourth component includes the accounting system, consisting of the methods and records established to **record, process, summarize, and report** entity transactions and to maintain accountability of the related assets and liabilities. To be effective, the information and communication system must accomplish the following goals for transactions:

1. (1) Identify and record all valid transactions ,
  2. (2) Describe on a timely basis
  3. (3) Measure the value properly,
  4. (4) Record in the proper time period
  5. (5) Properly present and disclose,
  6. (6) Communicate responsibilities to employees.
- Relevant information must be identified, captured and communicated in a manner that enables people to carry out their responsibilities. This means reports must contain the information that management needs and they must be available in a timely manner.
- ✓ Communication must be ongoing, both within and between various levels and activities of the organization. All staff must understand their roles in the internal control system and be able to communicate significant information upstream.
  - ✓ Reports containing operational, financial and compliance information that are needed for informed decisions – both internally generated and external information – must be available.
  - ✓ Supervisors must communicate duties and responsibilities to the employees that report to them, and employees must alert management to potential problems.
  - ✓ Information must be communicated to those outside the organization, such as vendors, and must also be available from external sources.
  - ✓ The systems must provide a way to communicate important information to the very top of the organization, when appropriate.



## Monitoring

Covers the oversight of internal controls by management or other parties outside the process; or the application of independent methodologies, such as customized procedures or standard checklists, by employees within a process.



## Monitoring

- Monitoring assesses the quality of internal control performance over time, Monitoring should be done on a regular basis.
- Monitoring activities may be **ongoing, separate evaluations**, or a **combination** thereof.
  - ✓ **Ongoing monitoring** (during normal operations )activities are often designed into recurring activities such as sales and purchases.
    - If operating reports are used to manage ongoing operations, exceptions to anticipated results will be recognized quickly.
  - ✓ **Separate evaluations** by management with the assistance of the internal audit function. If monitoring is done regularly during normal operations, it lessens the need for separate evaluations.
  - ✓ **Separate evaluations** are often performed by internal auditors or other personnel and often include communication of information about strengths and weaknesses and recommendations for improving internal control. Monitoring activities may also be performed by external parties (e.g., customers implicitly corroborate billing data by paying invoices).
- Finally, **management must monitor** the entire system. **Monitoring** assesses the quality of the internal control system's performance over time. Management must also revisit previously identified problems to make sure they have been corrected.
- When deficiencies in internal control are discovered, they should be reported immediately to top management and, for very significant matters, to the board of directors. Appropriate remedial action should be taken, and the results of the remedial action should be monitored.

An internal audit function is common in large organizations to monitor and evaluate controls on an ongoing basis. The expanded span of control and the growth in the volume of transactions associated with large organizations were factors in the emergence of the internal audit function.



## Foreign Corrupt Practices Act (FCPA)

A public corporation that must meet the provisions of the Foreign Corrupt Practices Act of 1977 should have a compliance program that includes all of the following steps

- documentation of the corporation's existing internal accounting control systems.
- a cost/benefit analysis of the controls and the risks that are being minimized.
- a system of quality checks to evaluate the internal accounting control system.

The FCPA has two main provisions:

- 1) **anti-bribery provisions**, and
- 2) **accounting provisions**.

### 1) Anti-bribery provisions,

Making it illegal for individuals or business entities to make **payments to foreign officials** to secure business.

The principal purpose of Foreign Corrupt Practices Act of 1977 was to prevent the bribery of foreign officials, foreign political parties or candidates for political office in the foreign country by U.S. firms seeking to do business overseas.

However if the company does not abide by the Act, the company may be assessed fines up to \$2,000,000 and imprisonment for up to 5 years.

### 2) Accounting provisions.

Section 102 of the FCPA requires all companies who are subject to the Securities Exchange Act of 1934 to

- Make and keep books, records, and accounts, which, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer;
- Devise and maintain a system of internal accounting controls sufficient to provide reasonable assurances that
  - ✓ Transactions are executed in accordance with management's general or specific authorization;
  - ✓ Transactions are recorded as necessary (i) to permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements and (ii) to maintain accountability for assets;
  - ✓ Access to assets is permitted only in accordance with management's general or specific authorization;
  - ✓ The recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

Note: The accounting and record-keeping provisions **apply to all U.S. companies that are regulated by the SEC**, not only those with foreign operations. This includes all publicly-held companies, as well as companies that are privately-held but have voluntarily registered with the SEC.



- describe the **major internal control provisions** of the Sarbanes-Oxley Act (Sections 302 and 404)
- n. identify the role of the PCAOB in providing guidance on the auditing of internal controls
  - o. differentiate between a top-down (risk-based) approach and a bottom-up approach to auditing internal controls
  - p. identify the PCAOB preferred approach to auditing internal controls as outlined in Auditing Standard #5
  - q. identify and describe the major internal control provisions of the Foreign Corrupt Practices Act

## Major internal control provisions of the Sarbanes-Oxley Act

The major internal control provisions of the Sarbanes-Oxley Act are in Sections 302 and 404.

### Section 302 – Corporate Responsibility for Financial Reports

Each annual or quarterly report that is filed or submitted in accordance with the Securities Exchange Act of 1934 (in other words, SEC reports) must include certifications by the principal executive officer(s) and the principal financial officer(s) that:

- The signing officer has **reviewed** the report;
- The report does not contain any untrue material statement or omit to state any material fact that could cause the report to be misleading;
- Based on the officer's knowledge, the financial statements and all the other related information in the report fairly present in all material respects the financial condition and results of operations of the company for all of the periods presented in the report;
- The signing officers:
  - Are responsible for establishing and maintaining internal controls;
  - Have designed the internal controls to ensure they are made aware of all material information relating to the company and all subsidiaries;
  - Have evaluated the effectiveness of the company's internal controls within the previous ninety days; and
  - Have reported on their findings about the effectiveness of their internal controls.
- The signing officers have disclosed to the company's auditors and its audit committee of the board of directors:
  - All deficiencies in the design or operation of the company's internal controls and have identified for the company's auditors any material weaknesses in its internal controls; and
  - Any fraud, regardless of how material it is or is not, that involves management or other employees who have a significant role in the company's internal controls; and
- The signing officers have stated in their report whether or not there were any significant changes in internal controls or in any other factors that could have a negative impact on the company's internal controls after the date of their evaluation, including any corrective actions that have been taken with regard to deficiencies or material weaknesses.



Furthermore, companies cannot avoid these requirements by reincorporating outside the United States or by transferring their company's activities outside of the United States. If they do this, the Act will continue to have full legal force over them.

#### **Section 404 – Management Assessment of Internal Controls**

The proper design and operation of an organization's system of internal controls is the **responsibility of management**. **Section 404** of the **Sarbanes-Oxley Act of 2002** requires publicly traded companies to issue a report stating that

1. Management takes responsibility for establishing and maintaining the firm's system of internal controls, and
2. The system has been functioning effectively over the reporting period.

Guidance for the management assessment of internal controls is provided by the SEC. In June 2007, the SEC published Release No. 33-8810, containing the interpretive guidance for management on Section 404. The guidance was intended to enable companies to implement the requirements more effectively and efficiently. Initially, the management assessment of internal controls provision of Sarbanes-Oxley (SOX 404) was required only of large publicly-held companies. However, after the SEC's interpretive guidance was released, smaller public companies that were not accelerated filers were also required to document their management assessment of internal controls over financial reporting for fiscal years ending after December 15, 2007. The SEC approved the guidance as an interpretive release rather than as a commission rule, in order that companies that already had established and effective processes would **not** have to alter their existing procedures to align them with the new guidance and also in order to allow the SEC to more easily update or amend the guidance as needed.

- identify the role of the PCAOB in providing guidance on the auditing of internal controls
  - o. differentiate between a top-down (risk-based) approach and a bottom-up approach to auditing internal controls
  - p. identify the PCAOB preferred approach to auditing internal controls as outlined in Auditing Standard #5

#### **PCAOB Preferred Approach to Auditing Internal Controls in Auditing Standard No. 5**

PCAOB Auditing Standard No. 5 and also SEC Release 33-8810 call for a **top-down, risk-based** approach to assessing and attesting to internal controls.

In both, a risk-based approach begins by identifying the risks that a material misstatement of the financial statements would not be prevented or detected in a timely manner. Beginning with risk assessment allows the auditor to focus on higher-risk areas while spending less time and effort on areas of lower risk. The auditor should test those controls that are important to the auditor's conclusion about whether the company's controls sufficiently address the assessed risk of misstatement to each relevant assertion.

PCAOB Auditing Standard 5 states that the auditor should perform procedures such as inquiry, observation, and inspection of documents, or walkthroughs – which consist of a combination of the preceding procedures – in order to fully understand and identify the likely sources of potential misstatements, whereas management might be aware of those risk areas on an on-going basis.



## PCAOB Auditing Standard 5: Steps to a Top-Down Approach

This guidance is directed to external, independent auditors. However, external auditors will be auditing management's assessment of the company's internal control over financial reporting.

1. **Identify Entity-level controls concerning control environment,** Controls over **management override**, The company's **risk assessment process**
2. **Identify significant accounts and disclosures and their relevant assertions.**
3. **Understand likely sources of misstatement.** The
4. **Select controls to test.**
5. **Test design effectiveness and operating effectiveness of the controls.**
6. **Evaluate identified deficiencies**

## Top-Down Approach Versus Bottom-Up Approach

In contrast to the top-down, risk-based approach, an auditor who approaches the audit of internal controls from the bottom up would focus first on performing detailed tests of controls at the process, transaction, and application levels. It is important for the auditor to use a top-down approach, because when the auditor uses a bottom-up process, he or she often spends more time and effort than is necessary to complete the audit. Furthermore, when an auditor takes a bottom-up approach, the auditor may spend relatively little time testing and evaluating entity-level controls but may rely almost exclusively on detailed tests of controls over individual processes, transactions and applications. Spending more effort than is necessary in lower-risk areas can diminish the effectiveness of the audit because it may prevent a higher-risk area from receiving the audit attention that it should receive.

**A top-down approach ensures that the controls that address the assessed risk of misstatement to each relevant assertion are tested.** If a bottom-up approach is used, those controls that address the risk of a material misstatement may not be tested.

## What Internal Control Can and Cannot Do

It is important that we remember what can be expected of internal control and what internal control cannot do.

### ➤ What Internal Control Can Do

- Internal control can help an organization get where it wants to go, avoiding pitfalls and surprises along the way.
- It can help an organization achieve its performance and profitability goals and prevent loss of resources.

### ➤ What Internal Control Cannot Do

- The COSO report warns against promoting internal control as a guarantee that the entity will achieve its financial reporting, operational, and compliance objectives.
- Internal control has limitations including simple human error or faulty judgments; and controls can be circumvented through collusion and well-planned fraud, Management override.
- No matter how well designed and operated, internal control can provide only reasonable assurance to management and the board of directors regarding achievement of the entity's objectives.
- Controls must be evaluated in terms of the cost-benefit relationship, so as to avoid excessive controls that result in increased bureaucracy and reduced productivity.



## Controls cannot give Absolute Assurance

- **Fraud** differs from error because it is intentional. It typically involves pressures or incentives to engage in wrongdoing and a perceived opportunity to do so.
  - ✓ Examples are fraudulent financial reporting and misappropriation of assets.
- Internal controls are designed to, among other things, prevent fraud.
  - ✓ However, because of the concealment aspects of fraudulent activity (e.g., collusion or falsification of documents), the controls cannot give absolute assurance that material fraud will be prevented or detected.
- Hiring ethical employees is the cornerstone to prevent fraud

## Who Is Responsible for Internal Control?

Some people believe that the internal audit function has primary responsibility for establishing and maintaining the internal control system. But the COSO report corrected that belief. It advanced corporate governance by delineating the responsibility of each group or person listed below to maintain and assess internal controls as follows:

### Responsibility for establishing and maintaining the Internal Control system

- The **board of directors is responsible for overseeing the internal control system**, providing governance, guidance and insight.
- The **CEO is ultimately responsible for the “tone at the top.”** The CEO should provide leadership and direction to the senior managers and review the way they are controlling the business.
- **Senior managers delegate responsibility** for establishment of specific internal control policies and procedures to personnel responsible for each unit’s functions.
- **Financial and accounting officers and staff are central to the exercise of control**, as their activities cut across as well as up and down the organization. However, all management personnel are involved, especially in controlling their own units’ activities.
- **Internal auditors evaluate the effectiveness of the control systems and contribute to their ongoing effectiveness**, but they do not have the primary responsibility for establishing or maintaining it.
- External parties such as **independent auditors often provide information** useful to effective internal control.





## Internal Auditing

### Definition

The Institute of Internal Auditors, the U.S. professional organization of internal auditors, has defined internal auditing as: “an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.”

### Purpose

The primary purpose of an internal audit is the appraisal of the design of, effectiveness of, and adherence to internal control policies and procedures and the assessment of the firm's quality of performance. The internal auditor ensures that any risk to the business is addressed and verifies that the firm's goals and objectives are met efficiently and effectively.

### Responsibility and Authority of the Internal Audit Function

The IIA practice standards include five categories for guidance:

1. Responsibility and scope of work
2. Independence.
3. Professional proficiency
4. Performance of audit work, and
5. Management of the internal auditing department.

### Responsibility and scope of work

An effective internal audit function provides to management and the audit committee a means of **monitoring** the reliability of financial reporting and the organization's control over operations.

This monitoring of control over operations includes the effectiveness and efficiency of operations as well as its compliance with applicable laws and regulations.

The internal audit function should encompass every part of the organization's operations, and to this end it should have unlimited access to the company's documents, records or properties.

As we saw in the previous section on Internal Control, a company's management – and the board of directors – is responsible for the organization's internal control. Internal auditors are utilized to monitor the performance of the organization's internal control systems.

The overall scope of work for the internal auditor is broader than that of the external auditor.

Thus, internal auditing has developed in order to **assist management in carrying out its monitoring responsibilities in an effective and efficient manner. The objective of internal audit is to promote effective control at a reasonable cost.**

#### Internal auditors' responsibilities with respect to the internal control system include:

- Testing individuals' compliance with controls to determine whether policies and procedures established by management are being followed, i.e., the quality of performance in carrying out assigned responsibilities.
- Evaluation of the adequacy and effectiveness of the control system in a systematic and thorough manner.



- Examination and evaluation of the reliability and integrity of financial and operating information and the means used to identify, measure, classify and report the information.
- Reviewing systems that impact operations and reports to determine whether the organization is in compliance with policies, plans, procedures, and regulations.
- Examination and evaluation of the effective and efficient use of an entity's resources.
- Reviewing the means used to safeguard assets and verifying the existence of those assets as appropriate.
- Furnishing analyses, appraisals, recommendations, counsel and information concerning activities reviewed to the management of the organization in order to assist them in the effective discharge of their responsibilities.
- Internal auditors are expected to comply with standards of professional conduct.
- The understandability of audit reports.
- Internal auditors are responsible to service the organization.

### Independence.

- The internal auditor must remain independent of operations in order to maintain objectivity throughout the audit process. The auditor should also remain independent of decision-making processes and undue influence by management. The board of directors should be the primary audience for the internal auditor.
- For the internal audit department to accomplish these responsibilities, it must have the necessary level of organizational status. This means it must have adequate authority and freedom to carry out the activities that need to be accomplished.
- The internal audit function should report to the board of directors through the audit committee. Also, the internal auditors need to be supported by both the audit committee and the board in order to make sure that those who are audited are cooperative with the internal auditors. The support of the board and audit committee will demonstrate that the work is viewed as important for the organization.
- Along with the correct level of organizational status, the internal audit department must have **organizational independence**.
  - ✓ This means that the internal audit function should not have any direct relationships with the various departments it will be auditing. Reporting directly to the board of directors achieves this organizational independence.



## The Difference Between Internal Auditors and External Auditors

External, independent auditors perform financial audits. Their responsibility is to issue an opinion on the accuracy and fairness of management's assertions regarding the financial statements.

The external auditor focuses on the financial accounting system and activities that have direct, material effect upon the financial statements.

A CPA firm that is nominated by the board of directors does the external auditing. The auditors are not employees of the company. External auditors, along with company management, have legal responsibility to issue financial statements that do not contain serious errors or mistakes.

This legal responsibility was increased with the Sarbanes-Oxley Act of 2002.

The responsibility of internal auditors, on the other hand, is to compare "what is" with "what should be" and report to management their findings, along with suggestions and recommendations for improvement.

Internal auditors are employees of the organization they audit. They are not referred to as "independent auditors," because that term is reserved for external auditors. Despite this, internal auditors must maintain a degree of independence from the activities they audit, in order to preserve their objectivity.

Despite the fact that internal auditors are distinct from external auditors, internal auditors do have responsibility to assist the external auditors in the external audit of the organization's financial statements.

## Coordination of Work Between Internal and External Auditors

- Costs of the external audit can be greatly reduced if the external auditor can use the work already done by internal auditors or performed by internal auditors to assist during the external audit.
- However, external auditors must base their justification for reliance on work by internal auditors upon
- the internal auditors' **competence** and the internal auditors' **objectivity**.
  - ✓ If internal auditors are competent, skilled in auditing techniques and have a broad perspective of controls, they can assist the external auditors with the financial audit of the organization.  
Competent internal auditors can eliminate the need for some of the work that might otherwise be done by the external auditors.
- Work done by internal auditors to test internal financial controls can be valuable to external auditors, subject to the following guidelines:
  - The internal auditors are not to direct the external audit of the organization's financial statements.
  - Before relying on the work of internal auditors, the external auditors must review and test the work performed by the internal auditors.
  - In the assessment of audit risk and in the performance of the audit, the external auditors will make all of the final decisions and conclusions.
  - The work of the internal and external auditors should be coordinated so as to reduce the amount of duplicate work that is done by both parties.
  - Because the internal auditors are a related party to the company, the external auditor will supervise any work done by the internal auditor as part of the external audit.



## Professional proficiency

- The technical proficiency and educational background of an internal auditor should be appropriate for the types of audits performed. In large firms, the audit department may have many members, some of which perform specialized types of audits, such as information systems audits.
- **Proficiency** refers to the ability of the internal auditor to apply knowledge to situations likely to be encountered, and to deal with them without extensive recourse to technical research and assistance. Proficiency in accounting principles and techniques is only required of auditors who work extensively with financial records and reports.
- Internal audit activity should collectively possess (or obtain) the knowledge, skills, and other competencies needed to perform its responsibilities.
- If certain knowledge, skills, or other competencies required to perform all or part of an engagement is lacking, the CAE should seek external advice and assistance.

## The Authority and Responsibility of Internal Auditors

➤ The CAE and staff of the internal audit activity are authorized to:

- Have unrestricted access to all functions, records, property, and personnel.
- Have full and free access to the audit committee.
- Allocate resources, set frequencies, select subjects, determine scopes of work, and apply the techniques required to accomplish audit objectives.
- Obtain the necessary assistance of personnel in units of the organization where they perform audits, as well as other specialized services from within or outside the organization.

➤ Unless otherwise directed, the CAE and staff of the internal auditing activity are not authorized to:

- Perform any operational duties for the organization or its affiliates.
- Initiate or approve accounting transactions external to the internal auditing activity.
- Direct the activities of any organization employee not employed by the internal auditing activity, except to the extent such employees have been appropriately assigned to auditing teams or to otherwise assist the internal auditors.

- The responsibility of the internal auditor is to review and appraise policies, procedures, plans and records for the purpose of informing and advising management.
- Internal auditors **do not have any authority or responsibility over operating activities.**
  - ✓ If they did, it would impair any independence and objectivity they may have in working in these areas.
  - ✓ It is important that internal auditors remain detached from the items that they are auditing or reviewing so that they will be able to carry out their duties to management. Therefore, after a person joins internal audit, that person should not audit the area he came from for a reasonable amount of time. The IIA recommends this reasonable time to be a minimum of one year.



- ✓ The responsibility of internal audit ends with the **making of recommendations**. Auditors should have no authority over or responsibility for the activities they audit. It is the responsibility of the board or management to implement the recommendations brought to them by the internal auditors.

### Performance of audit work

- Audit work should include:
  1. Planning the audit.
  2. Examining and evaluating information & documentation of the audit work.
  3. Communicating results.
  4. Following up to determine that appropriate action is taken on reported audit findings.

### Management of the internal auditing department

- The director of internal auditing should manage the auditing department, including establishing the following controls:
  - ✓ Statement of purpose, authority, and responsibility for the internal auditing department
  - ✓ Plans to carry out the department's responsibilities
  - ✓ Written policies and procedures to guide the audit staff
  - ✓ Program for selecting and developing the human resources of the audit department
  - ✓ Coordination of internal and external audit efforts
  - ✓ A quality assurance program to evaluate the operation of the internal auditing department

### Reporting Audit Results

- Potential audiences for the audit report include divisional and operational managers as well as top management and the board of directors. The internal auditor should inform management of all problems. Because of the possible use of the internal audit report by external auditors, legal counsel may need to be consulted before highly sensitive information is included in a written audit report. In addition, according to IIA Guideline 430.02, "The internal auditor should discuss conclusions and recommendations at appropriate levels of management before issuing final written reports." Such discussions minimize misunderstandings.
- The auditor's report identifies conditions as findings, or issues to address or recognize. One audit report may include several specific findings, and each finding, which may be positive or negative, should be documented on a separate summary findings sheet. Negative findings are called exceptions. Findings are performance or actions as measured against the firm's policies, procedures, standards, or external laws and regulations and against risks such as inadequate safeguarding of company assets.
- Each summary findings sheet should report the condition; the policy, legal criteria, or expectation; the effect of the condition; the cause of the condition; and recommendations that offer alternatives relative to the specific control objective.
- A recommendation does not necessarily represent a solution for the condition. The auditor can make four types of recommendations:
  - ✓ Make no changes.
  - ✓ Modify internal control policies and/or procedures.



- ✓ Add insurance for potential risks discovered during the audit.
- ✓ Adjust the required rate of return on an activity to match the associated risk.
- An internal auditor may report a number of findings to management. General findings may include such items as inadequate control procedures, lack of adherence to control procedures (e.g., disorganized records), inadequate safeguarding of assets, inefficient allocation of resources, etc.
- Each general finding should be supported by specific findings. For example, an internal auditor conducting a compliance audit might provide managers with a report indicating which employees failed to have their timecards up-to-date. An internal auditor conducting an audit of the physical security of assets might report anyone whose sensitive files were found unlocked during an after-hours check. Or a software audit might result in a report of computers on which unlicensed software had been loaded.

### Types of Audits Conducted by Internal Auditors

- Internal audits are conducted for a number of reasons, including financial control, assurance of compliance with regulations, and assessment of internal control policies and procedures. An internal auditor could conduct one or more of several types of audits: financial, operational, performance, electronic data processing, contract. compliance, and special investigations (such as fraud).
- Internal auditors have concentrated less on financial audits and more on operational audits. Over half of the average internal auditor's time is spent on operational audits. Compliance audits are another key type of audit.
- According to Sawyer, internal auditing services may be classified in three categories:
  - ✓ Financial.
    - The analysis of the economic activity of an entity as measured and reported by accounting methods.
  - ✓ Compliance.
    - The review of both financial and operating controls and transactions to see how well they conform with established laws, standards, regulations, and procedures.
  - ✓ Operational.
    - The comprehensive review of the varied functions within an enterprise to appraise the efficiency and economy of operations and the effectiveness with which those functions achieve their objectives.



## Financial audit

- A financial audit is an audit of the firm's financial statements. The objective of a financial audit is to determine whether the overall financial statements fairly represent the firm's operations and financial condition. The internal auditor may conduct an audit of financial reports for a department or a segment of a department. The audience for a financial audit is the board of directors and senior management. The direction of a financial audit conducted by an internal auditor is forward-looking, in contrast to the external audit, which is backward-looking.
- **Audit of financial statements** – to evaluate the assertions made by management on the organization's financial statements and to issue an opinion on the fairness of the statements. Those assertions are:
  - ✓ **Existence or occurrence** (the information represents actual transactions and events);
  - ✓ **Completeness** (no material financial information has been omitted);
  - ✓ **Rights and obligations** (all material rights and obligations with respect to assets, liabilities and equity accounts have been disclosed);
  - ✓ **Valuation or allocation** (the numbers reported on the financial statements are materially correct);
  - ✓ **Presentation and disclosure** (the format, organization and classification of accounts on the financial statements and disclosures in the accounts, footnotes and accounting policies conform to generally accepted accounting principles).
- **Audit of financial controls** – examining two aspects of financial internal controls:
  - ✓ controls over financial resources; and
  - ✓ controls over the accounting for financial resources.
- Internal auditors are concerned with the accountability of the assets. At all times someone should be responsible for them and there should be periodic checks of the existence and condition of those assets. Protection is needed against risks such as fire, flood and other natural disasters.
- Financial audits are normally conducted by external auditors, however, they are also part of the internal audit universe. Coordination with external auditor is preferably made in these audits to minimize duplicate efforts and ensure optimum audit coverage using the organization's scarce resources
- 2120.A1 - Based on the results of the risk assessment, **the internal audit activity should evaluate the adequacy and effectiveness of controls encompassing the organization's governance, operations, and information systems.** This should include:
  - ✓ Reliability and integrity of financial and operational information.
  - ✓ Effectiveness and efficiency of operations.
  - ✓ Safeguarding of assets.
  - ✓ Compliance with laws, regulations, and contracts.
- **The CAE's core role is to ensure that the audit committee receives needed support and assurance services.** A prime objective of the audit committee is to oversee financial reporting. Thus, the IAA is usually requested to form an opinion on the adequacy and effectiveness of internal control over financial reporting and the reliability of financial reports.
- The external auditor would most likely detect an **unreported disposal of a fixed asset** due to the audit objective.





- Internal auditors are often requested to **coordinate their work with that of the external auditors**.
  - ✓ For example, external auditors would keep the work of attesting to the fairness of presentation of cash position in the balance sheet.
    - Shared audit work between these auditors would be evaluating the system of controls over cash collections and similar transactions, evaluating the adequacy of the organization's overall system of internal controls, and reviewing the system established to ensure compliance with policies and procedures that could have a significant impact on operations.

## Operational audit

- An operational audit is technically a nonfinancial audit. The scope of the operational audit exceeds that of a financial statement audit
- **Operational audit** – examining and evaluating systems of internal control, overall company operations and the quality of performance in carrying out assigned responsibilities. In order to assess these items, a company **must have a standard level** of behavior or output, or something that is to be achieved. Auditors will then compare the results of the operations with these standards. The focus of an operational audit is on the three Es – **efficiency, effectiveness and economy**.
  - ✓ The main techniques for the auditor in an operational audit are financial analysis, the observation of departmental activities and questionnaire interviews of employees.
- In addition, as part of an operational audit, the internal auditor will **make recommendations** about how to improve the process or operation.
- The operational audit is a tool for regularly and systematically appraising the effectiveness of the firm against corporate and industry standards and applicable laws and regulations. The objectives are to ensure the board of directors and senior management that the firm's goals and objectives are being carried out and to identify conditions that can be improved.
- In an operational audit, the auditor has the responsibility of discovering operating problems, informing the board of directors and management of the problems, and recommending realistic courses of action for resolving the problems. Internal auditors will evaluate the adequacy and effectiveness of the controls that are in place in relation to operating information, as well as financial, records and information, which is the focus of the financial statement audit.
  - ✓ Though external auditors are concerned with operations as they affect the financial audit, the internal auditors are going to be more involved in this and will also look at those areas that do not affect the financial statements themselves. This will include controls related to policies, procedures and decision-making.
- An operational audit is thus a thorough examination of a department, division, function, etc. Its purpose is to appraise managerial organization, performance, and techniques.
  - ✓ It attempts to determine the extent to which organizational objectives have been achieved.
  - ✓ It is a control technique that provides management with a method for evaluating the effectiveness of operating procedures and internal controls.
  - ✓ The report resulting from an operational audit consists primarily of specifying where problems exist or emphasizing the absence of problems.





- ✓ The internal auditor compares a department's operations with company policies and procedures, industry averages, and departmental trends.

### Compliance audit

- determining to what degree an organization is operating in an orderly way, effectively and visibly conforming to certain specific requirements of its policies, procedures, standards, or laws and governmental regulations. Compliance auditing is more objective than other internal auditing applications. To perform a compliance audit, the auditor must know exactly what policies, procedures, standards, etc., are required.
- In a compliance audit, the internal auditor is not interested only in the compliance or lack of compliance, but in case of noncompliance, he will also determine the **cause** of the noncompliance, the **cost** of the noncompliance and **what needs to be done** in order to be in compliance.
- The causes of noncompliance may be faulty procedures, changes in the conditions related to the regulation, or perhaps simply mistakes and lack of review or supervision.
- Compliance audits can be initiated by management or may be required by law or regulation.

A strong commitment by management to comply is a positive factor in reducing the risk of noncompliance.

### Other Types of Audits

- Performance audit
- Fraud audit
- Control Self Assessment
- Environmental Audits
- Quality audit

### Internal Audit Assistance Provided to Management

- To assist management, the internal audit function provides analyses, appraisals, recommendations, counsel, and information concerning activities reviewed.

### Operating management

- Operating management, such as department heads or supervisors, is accountable for the effectiveness and efficiency of operations. Audit reports aid operating management in this regard by identifying areas needing improvement and stimulating action in the appropriate direction. In addition, the results of an internal audit may provide objective support to the operations manager for issues that will require the support of upper management to address and improve. Due to the nature of the auditing process, the auditor may bring to the production manager's attention activities or practices of which he or she has not yet become aware. expectations of the internal audit, as well as lessons learned from previous internal audits, may ultimately serve to promote more disciplined operations.

### Board of directors and senior management

- Audit reports serve to identify for the board of directors and senior management the changing level and types of risks that management needs to address. An internal audit report can provide senior management with details about operations as well as controls that are not included in other reports.



- This may be due to the nature or scope of the audit or the independence and objectivity of the internal auditor.

### Internal Audit Reports

- Communications by internal auditors to management may be **formal or informal, oral or written**, as is appropriate.
- Pronouncements of The Institute of Internal Auditors require communications to include the **purpose, scope, and results** of the engagement and, if appropriate, an **opinion**.

### Auditor Follow-Up

- IIA Standards require that internal auditors **follow up** on the actions taken by the company regarding any deficiencies found.
  - ✓ The auditor should determine that either corrective action has been taken, or management has assumed the risk of not taking corrective action.
  - ✓ In following up, the auditor should receive all of the responses from the auditees to the audit,
    - evaluate if those replies are adequate and then be certain that actions are actually taken to correct the problems.
  - ✓ In order to ensure that the actions have been taken, the auditor may need to do additional testing after the correction has been put into place.
- The auditor is the best person to carry out this necessary step because he is more familiar with the situation and the potential risks. He should also be more impartial or objective than the manager who has to make the changes.



## Foreign Corrupt Practices Act (FCPA)

A public corporation that must meet the provisions of the Foreign Corrupt Practices Act of 1977 should have a compliance program that includes all of the following steps

- documentation of the corporation's existing internal accounting control systems.
- a cost/benefit analysis of the controls and the risks that are being minimized.
- a system of quality checks to evaluate the internal accounting control system.

The FCPA has two main provisions:

- 1) **anti-bribery provisions**, and
- 2) **accounting provisions**.

### 1) Anti-bribery provisions,

Making it illegal for individuals or business entities to make **payments to foreign officials** to secure business.

The principal purpose of Foreign Corrupt Practices Act of 1977 was to prevent the bribery of foreign officials, foreign political parties or candidates for political office in the foreign country by U.S. firms seeking to do business overseas.

However if the company does not abide by the Act, the company may be assessed fines up to \$2,000,000 and imprisonment for up to 5 years.

**Note:** A **corrupt payment** is one that intends to cause the recipient to misuse his or her official position in order to wrongfully direct business to the payer, *whether or not the payment succeeds in its purpose*.

Under the act, **it is illegal for any company or anyone acting on behalf of a company to bribe any foreign official in order to obtain or retain business**. In addition, a firm – or an individual acting on behalf of a firm – will be held criminally liable if it makes payments to a third party with the knowledge that those payments will be used by the third party as bribes.

**The responsibility to insure that all payments are acceptable is given to the company as whole** and not to any individual or position within the company, although individuals are personally liable nonetheless for their own actions. The company must ensure that all transactions are in accordance with management's general, or specific, authorization and are recorded properly.

### 2) Accounting provisions.

Section 102 of the FCPA requires all companies who are subject to the Securities Exchange Act of 1934 to

- Make and keep books, records, and accounts, which, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer;
- Devise and maintain a system of internal accounting controls sufficient to provide reasonable assurances that
  - ✓ Transactions are executed in accordance with management's general or specific authorization;
  - ✓ Transactions are recorded as necessary (i) to permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements and (ii) to maintain accountability for assets;
  - ✓ Access to assets is permitted only in accordance with management's general or specific authorization;



- ✓ The recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

Note: The accounting and record-keeping provisions **apply to all U.S. companies that are regulated by the SEC**, not only those with foreign operations. This includes all publicly-held companies, as well as companies that are privately-held but have voluntarily registered with the SEC.

### **ICMA 2013-12-30**

71. Which one of the following **best** describes an important provision of the U. S. Foreign Corrupt Practices Act?

- a. Auditors cannot provide bookkeeping or other services related to the accounting records or financial statements of the audit client.
- b. Companies must follow the laws of the company's home country as well as the laws of the countries where any foreign subsidiaries are located.
- c. The CEO and CFO must certify that they have no knowledge of any corrupt practices occurring in any overseas subsidiaries of U.S. companies.
- d. The internal accounting controls should be examined and if material weaknesses are found, controls must be strengthened.

71. d

72. Which one of the following statements best describes the internal control requirements of the US Foreign Corrupt Practices Act of 1977?

- a. It is unlawful to bribe foreign government officials to obtain or retain business.
- b. Management must establish systems to provide assurances that transactions are authorized.
- c. All major cash payments and receipts must be reported to the U.S. Department of the Treasury.
- d. It is unlawful to bribe officers or officials of foreign corporations to obtain or retain business.

72. b

### **2010 By Institute of Certified Management Accountants**

248. CSO: 1D1e LOS: 1D1q

A public corporation that must meet the provisions of the Foreign Corrupt Practices Act of 1977 should have a compliance program that includes all of the following steps **except**

- a. an authorized and properly signed agreement that it will abide by the Act.
- b. documentation of the corporation's existing internal accounting control systems.
- c. a cost/benefit analysis of the controls and the risks that are being minimized.
- d. a system of quality checks to evaluate the internal accounting control system.

248. Correct answer a. Foreign Corrupt Practices Act of 1977 does not require a public company to sign an agreement that it will abide by the Act, however if the company does not abide by the Act, the company may be assessed fines up to \$2,000,000 and imprisonment for up to 5 years.



249. CSO: 1D1e LOS: 1D1q

The principal impetus for the enactment of the Foreign Corrupt Act by the U.S. Congress was to

- a. discourage unethical behavior by foreigners employed by U.S. firms.
- b. promote the mandates issued by the United Nations with regard to global trade between its member nations.
- c. prevent the bribery of foreign officials by U.S. firms seeking to do business overseas.
- d. require mandatory documentation of the evaluation of internal controls by the independent auditors.

249. Correct answer c. The principal purpose of Foreign Corrupt Practices Act of 1977 was to prevent the bribery of foreign officials, foreign political parties or candidates for political office in the foreign country by U.S. firms seeking to do business overseas.

**[1272] Gleim #: 9.3.121 -- Source: CMA 1285 3-30**

The requirement of the Foreign Corrupt Practices Act of 1977 to devise and maintain adequate internal control is assigned in the Act to the

- A. Chief financial officer.
- B. Board of directors.
- C. Director of internal auditing.
- D. Company as a whole with no designation of specific persons or positions.

Answer (D) is **correct**. The accounting requirements apply to all public companies that must register under the Securities Exchange Act of 1934. The responsibility is thus placed on companies, not individuals.

**[1274] Gleim #: 9.3.123 -- Source: CMA 1280 3-26**

A major impact of the Foreign Corrupt Practices Act of 1977 is that registrants subject to the Securities Exchange Act of 1934 are now required to

- A. Keep records that reflect the transactions and dispositions of assets and to maintain a system of internal accounting controls.
- B. Provide access to records by authorized agencies of the federal government.
- C. Prepare financial statements in accord with international accounting standards.
- D. Produce full, fair, and accurate periodic reports on foreign commerce and/or foreign political party affiliations.

Answer (A) is **correct**. The main purpose of the Foreign Corrupt Practices Act of 1977 is to prevent bribery by firms that do business in foreign countries. A major ramification is that it requires all companies that must register with the SEC under the Securities Exchange Act of 1934 to maintain adequate accounting records and a system of internal accounting control.

**[1273] Gleim #: 9.3.122 -- Source: CPA, adapted**

The Sarbanes-Oxley Act has strengthened auditor independence by requiring that management

- A. Engage auditors to report in accordance with the Foreign Corrupt Practices Act.
- B. Report the nature of disagreements with former auditors.
- C. Select auditors through audit committees.
- D. Hire a different CPA firm from the one that performs the audit to perform the company's tax work.



Answer (C) is **correct**. The Sarbanes-Oxley Act requires that the audit committee of a public company hire and pay the external auditors. Such affiliation inhibits management from changing auditors to gain acceptance of a questionable accounting method. Also, a potential successor auditor must inquire of the predecessor auditor before accepting an engagement.

**[1276] Gleim #: 9.3.125 -- Source: CPA 1183 L-45**

Which of the following corporations are subject to the accounting requirements of the Foreign Corrupt Practices Act (FCPA)?

- A. All corporations engaged in interstate commerce.
- B. All domestic corporations engaged in international trade.
- C. All corporations that have made a public offering under the Securities Act of 1933.
- D. All corporations whose securities are registered pursuant to the Securities Exchange Act of 1934.

Answer (D) is **correct**. The accounting requirements of the FCPA apply to all companies required to register and report under the Securities Exchange Act of 1934. These companies must maintain books, records, and accounts in reasonable detail that accurately and fairly reflect transactions. The FCPA also requires these companies to maintain a system of internal accounting control that provides certain reasonable assurances, including that corporate assets are not used for bribes.



## **Sarbanes-Oxley Act (July 30, 2002)**

**The most significant securities legislation since 1940**

### **Learning Outcome Statements for the CMA exam**

- m. describe the **major internal control provisions** of the Sarbanes-Oxley Act (Sections 201, 203, 302 and 404)
- n. identify the role of the PCAOB in providing guidance on the auditing of internal controls
- o. differentiate between a top-down (risk-based) approach and a bottom-up approach to auditing internal controls
- p. identify the PCAOB preferred approach to auditing internal controls as outlined in Auditing Standard #5

### **Sarbanes-Oxley Act**

#### **The Sarbanes-Oxley Act applies to**

- all publicly-held companies in the U.S., all of their divisions, and
- all of their wholly-owned subsidiaries.
- It also applies to any non-U.S. owned publicly-held multinational company that engages in business in the U.S. A privately-held company may also comply with SOX in preparation for an initial public offering, in preparation for raising private funding, or on a voluntary basis using it as a best practices benchmark.

#### **Major internal control provisions of the Sarbanes-Oxley Act that impacting auditors, management, and audit committees.**

The major internal control provisions of the Sarbanes-Oxley Act are in Sections 201, 203, 302 and 404

- **Title I - Public Company Accounting Oversight Board (PCAOB)**
- **Title II – Auditor Independence**
  - **Section 201 – Services Outside the Scope and Practice of Auditors**
  - **Section 203 – Audit Partner Rotation**
- **Title III – Corporate Responsibility**
  - **Section 302 – Corporate Responsibility for Financial Reports**
- **Title IV – Enhanced Financial Disclosures**
  - **Section 404 – Management Assessment of Internal Controls and the Independent Auditor’s Attestation to Management’s Assessment of Internal Controls**
- **PCAOB Auditing Standard No. 5 – Guidance for External Auditors**



## Title I - Public Company Accounting Oversight Board (PCAOB)

### Objective of the PCAOB

Oversee the auditing of public companies that are subject to the securities laws to protect the interests of investors and to enhance the public's confidence in independent audit reports.

### The responsibilities of the PCAOB in detail include

- Registering public accounting firms that audit public companies (both U.S. firms and non-U.S. firms) that prepare or issue audit reports on or participate in audits of U.S. public companies.
- Establishing standards
- Conducting inspections of registered public accounting firms & Enforcing compliance with the Act

### PCAOB structure

The PCAOB is an independent, non-governmental board. It is a non-profit corporation established by Congress under the Sarbanes-Oxley Act.

The SEC has oversight authority over the PCAOB, including the approval of the Board's rules, standards, and budget.

The PCAOB consists of five Board members who are appointed by the SEC.

The Board members must be financially literate and must be from the private sector. Two of the members must be or have been certified public accountants. The remaining three must **not** be and **cannot have been** CPAs.

The Chair may be held by one of the CPA members only if that member has not been a practicing CPA for five years.

The PCAOB is headquartered in Washington, D.C. and has regional offices throughout the United States.

As provided in the Sarbanes-Oxley Act, the Board's operations are funded by "accounting support fees" paid **by issuers of securities** that are registered with the SEC and other companies that are required to file reports with the SEC, as well as by registration and annual fees paid by public accounting firms.

### PCAOB & the Audit firms/standards

- In the Act, public accounting firms were required to register with the PCAOB.
- The PCAOB was charged with developing auditing standards to be used by registered public accounting firms in their preparation and issuance of audit reports.
- The PCAOB conducts regular inspections of the registered public accounting firms to assess their degree of compliance with the Act and has procedures for the investigation and discipline of firms that commit violations.
- The formation of the PCAOB constituted the first time that auditors of U.S. public companies had been subject to external and independent oversight. Previously, the profession had been self-regulated through a formal peer review program administered by the AICPA. That peer review program continues, and accounting and audit firms that are required to be inspected by the PCAOB are also subject to peer review.

## Title II – Auditor Independence

### Section 201 – Services Outside the Scope and Practice of Auditors

In order to maintain auditor independence, Section 201 lists specific non-audit services that **may not be provided by an external auditor** to an audit client because their provision creates a *fundamental conflict of interest* for the accounting firms.

These services are:

- Bookkeeping services or other services relating to keeping the accounting records or preparing the financial statements of the audit client.
- Financial information systems design and implementation.
- Appraisal or valuation services, fairness opinions, or contribution-in-kind reports.





- Actuarial services.
- Internal audit outsourcing services.
- Management functions.
- Human resource services.
- Broker/dealer, investment adviser, or investment banking services.
- Legal services.
- Expert services unrelated to the audit.
- Any other service that the Public Company Accounting Oversight Board (PCAOB) determines, by regulation, is not permissible.

The most frequent type of non-audit service that had been provided prior to SOX was **financial information systems design and implementation**. These kinds of services had been a big fee producer for the consulting divisions of CPA firms. For many of the big public accounting practices, these services had provided over one-third of their total revenues.

### The Act's intent was not to prohibit **all** non-audit services.

According to SEC *Release No. 33-8183* containing the final rules regarding auditor independence, independent auditors can provide tax services such as tax compliance, tax planning and tax advice to audit clients **without impairing** their independence.

However, tax services such as representing an audit client in a tax court or promoting a tax shelter transaction could **impair** the auditor's independence and should not be provided.

SEC *Release No. 33-8183* states that "The Commission's principles of independence with respect to services provided by auditors are largely predicated on three basic principles, violations of which would impair the auditor's independence:

- (1) an auditor cannot function in the role of management,
- (2) an auditor cannot audit his or her own work, and
- (3) an auditor cannot serve in an advocacy role for his or her client."

Therefore, services not listed above are prohibited if they would:

- Result in an auditor functioning in any role that is properly a management function.
- Result in an auditor auditing his or her own work.
- Place the auditor in a position of advocating for a client. Non-audit services not listed above may be provided as long as the company's audit committee preapproves it and as long as they do not violate any of those four stipulations.

### **Section 203 – Audit Partner Rotation :**

- PCAOB requiring audit firm rotation to ensure that a "new look" is taken periodically at the financial statements.

A public accounting firm that is registered with the PCAOB may not provide audit services to a client if the lead (or coordinating) audit partner (the partner with primary responsibility for the audit), or the concurring review audit partner (the partner responsible for reviewing the audit) has performed audit services for that client in each of the five previous fiscal years of the client.

This means the lead audit partner and the concurring review audit partner must rotate off a particular client's audit after five years.

They must then remain off that audit for another five years.

Other audit partners who are part of the engagement team must rotate off after seven years and remain off for two years if they meet certain criteria.

Specialty partners, i.e. partners who consult with others on the audit engagement regarding technical or industry-specific issues, do not need to rotate off.

Examples of specialty partners are tax or valuation specialists. Other partners who serve as technical resources for the audit team and are not involved in the audit *per se* are also not required to rotate off the audit.



## Title III – Corporate Responsibility

### Section 302 – Corporate Responsibility for Financial Reports

Each annual or quarterly report that is filed or submitted in accordance with the Securities Exchange Act of 1934 (in other words, SEC reports) must include certifications by the principal executive officer(s) and the principal financial officer(s) that:

- The signing officer has **reviewed** the report;
- The report does not contain any untrue material statement or omit to state any material fact that could cause the report to be misleading;
- Based on the officer's knowledge, the financial statements and all the other related information in the report fairly present in all material respects the financial condition and results of operations of the company for all of the periods presented in the report;
- The signing officers:
  - Are responsible for establishing and maintaining internal controls;
  - Have designed the internal controls to ensure they are made aware of all material information relating to the company and all subsidiaries;
  - Have evaluated the effectiveness of the company's internal controls within the previous ninety days; and
  - Have reported on their findings about the effectiveness of their internal controls.
- The signing officers have disclosed to the company's auditors and its audit committee of the board of directors:
  - All deficiencies in the design or operation of the company's internal controls and have identified for the company's auditors any material weaknesses in its internal controls; and
  - Any fraud, regardless of how material it is or is not, that involves management or other employees who have a significant role in the company's internal controls; and
- The signing officers have stated in their report whether or not there were any significant changes in internal controls or in any other factors that could have a negative impact on the company's internal controls after the date of their evaluation, including any corrective actions that have been taken with regard to deficiencies or material weaknesses.

Furthermore, companies cannot avoid these requirements by reincorporating outside the United States or by transferring their company's activities outside of the United States. If they do this, the Act will continue to have full legal force over them.



## Title IV – Enhanced Financial Disclosures

### Section 404 – Management Assessment of Internal Controls

The proper design and operation of an organization's system of internal controls is the **responsibility of management**.

**Section 404** of the **Sarbanes-Oxley Act of 2002** requires publicly traded companies to issue a report stating that: Management takes responsibility for establishing and maintaining the firm's system of internal controls, & The system has been functioning effectively over the reporting period.

**Section 404(a)** requires each annual report required by the SEC to:

- State the responsibility of management for establishing and maintaining an adequate internal control structure and procedures for financial reporting.
- Contain an assessment by management of the adequacy of the company's **internal control over financial reporting (ICFR)** for short).

#### Independent Auditor

Section 404(b) of the Sarbanes-Oxley Act requires the company's independent auditor to **report on and attest** to management's assessment of the effectiveness of the internal controls.

The external auditors are then required to **review** the supporting materials used by management/internal audit in developing their internal financial controls report, in order to assert that management's report is an accurate description of the internal control environment (Section 404(b)).

Guidance for the independent auditor's attestation to management's assessment is contained in the Public Company Accounting Oversight Board's (PCAOB's) *Auditing Standard No. 5*.

#### Management

Management is required to **document and test its internal financial controls** and to report on their effectiveness (Section 404(a)). The first step in a Section 404 compliance review is to identify the key processes organized in terms of the basic accounting cycles: Revenue cycle, Direct expenditures cycle, Payroll cycle ...etc. Guidance for the management assessment of internal controls is provided by the SEC in *Release Nos. 33-8810; 34-55929*. SEC *Release 33-8810* specifies that "Management is responsible for maintaining evidential matter, including documentation, to provide reasonable support for its assessment."

#### Internal Auditor

In many firms, the internal audit activity is very involved in the management review and testing of the internal controls

Both SEC *Release 33-8810* and PCAOB *Auditing Standard No. 5* prescribe a **top-down, risk-based approach** to evaluating internal control over financial reporting.

In both, a risk-based approach begins by **identifying the risks** that a material misstatement of the financial statements would not be prevented or detected in a timely manner.

Both SEC *Release 33-8810* (guidance for management) and the PCAOB's *Auditing Standard No. 5* (guidance for external auditors) have the effect of **efficiently focusing Section 404 compliance on the most important matters affecting investors**.

Beginning with risk assessment allows the auditor to focus on higher-risk areas while spending less time and effort on areas of lower risk. The auditor should test those controls that are important to the auditor's conclusion about whether the company's controls sufficiently address the assessed risk of misstatement to each relevant assertion.

**SEC Release 33-8810 – Guidance for Management**

Management's annual assessment of the effectiveness of its internal control over financial reporting (ICFR) must be made in accordance with a suitable control framework such as COSO's *Internal Control-Integrated Framework*.

**The SEC guidance is organized around two broad principles:**

- 1) Management's evaluation of evidence about the operation of its controls should be based on its **assessment of risk**. The approach to this assessment should be a **top-down approach**. This allows management to concentrate on areas of financial reporting that pose the highest risk of a material misstatement.
- 2) Management should determine whether it has implemented controls that adequately address the risk that a material misstatement of the financial statements would not be prevented or detected in a timely manner.

The three broad, general steps in assessing the effectiveness of internal control over financial reporting are:

- 1) Management's evaluation should begin with the **identification and assessment of the risks** to reliable financial reporting.
- 2) Next, management should **evaluate whether it has controls in place that are designed to adequately address those risks**. The controls that management identifies and documents should be controls that are important to achieving the objective of internal control over financial reporting.
- 3) These controls should then be **tested**, that is, subjected to procedures that will **evaluate whether they are operating effectively**.

This interpretive guidance clarified for management where the focus of its internal control evaluation should be: on whether it has put into place controls that adequately address the risk that a **material misstatement of the financial statements would not be prevented or detected in a timely manner**.

Management is not required to identify every control in every process or to document all of the business processes impacting its internal control over financial reporting. Instead, management can focus its evaluation and its documentation supporting its assessment **on the controls that it has determined will adequately address the risk of a material misstatement** of the financial statements.

The guidance also clarified that **management's evaluation of evidence about its controls should be based on its assessment of risk**. This means that in low-risk areas, management can use more efficient approaches to gathering evidence while performing more extensive testing in high-risk areas. Management is thus able to concentrate its resources on those areas of financial reporting that pose the highest risks to reliable financial reporting.

**PCAOB Auditing Standard No. 5 – Guidance for External Auditors**

Auditors are guided in their attestation to management's assessment of internal controls by the Public Company Accounting Oversight Board's (PCAOB's) *Auditing Standard No. 5* issued on June 12, 2007.

The independent auditor's objective in an audit of internal control over financial reporting is to **express an opinion** on the effectiveness of the company's internal control over financial reporting.

The audit of internal control over financial reporting (ICFR) should be integrated with the audit of the financial statements. Thus, the audit of internal control over financial reporting is a core responsibility of the auditor and an integral part of the audit report.

**SEC Release 33-8810 – Guidance for Management**

Here are detailed steps as outlined in *Release No. 33-8810*:

**1) Identify financial reporting risks and controls.**

Management should identify those risks of misstatement that could, individually or in combination with others, result in a material misstatement of the financial statements.

Usually, this identification of financial reporting risks should begin with evaluating how the requirements of GAAP apply to the company's business, operations and transactions.

The identification of risks within Information Technology should be an integral part of management's top-down, risk-based approach to identifying risks.

Management's evaluation of the risk of misstatement should also include consideration of how vulnerable the company is to fraudulent activity and whether the exposure could result in a material misstatement of the financial statements.

**2) Identify controls that adequately address the identified financial reporting risks.**

Provide reasonable assurance regarding the reliability of financial reporting

**3) Management must evaluate whether it has the controls in place that are necessary for an effective system of internal control.****Examples:**

Evaluate preventive controls, detective controls and corrective controls that may adequately address financial reporting risks.

Evaluate the entity-level controls: controls related to the control environment; controls over management override; the entity-level risk assessment process and monitoring activities; and the policies that address significant business control and risk management practices.

**Entity-level controls** may be designed to operate at the process, application, transaction or account level. They need to operate at a level of precision that would adequately prevent or detect on a timely basis misstatements in one or more financial reporting elements that could result in a material misstatement of the financial statements.

**4) Role of Information Technology general and application controls.**

IT **general** controls alone ordinarily do not adequately address financial reporting risks. However, IT general controls are important because the proper operation of automated controls or IT functionality often depends upon effective IT general controls.

**5) Evidential matter (documentation) to support the assessment.****6) Evaluate evidence of the operating effectiveness of ICFR.**

focus its evaluation of the operation of controls on areas that pose the highest ICFR risk.

Management's assessment of ICFR risk also should consider the impact of entity-level controls, such as the relative strengths and weaknesses of the control environment, which may influence management's judgments about the risks of failure for particular controls.

**7) Determine the evidence needed to support the assessment.****8) Implement procedures to evaluate evidence of the operation of ICFR.****9) Evidence to support the assessment****10) Multiple location considerations****11) Evaluate control deficiencies.****PCAOB Auditing Standard No. 5 – Guidance for External Auditors**

Here are the steps to be followed in performing a top-down approach to auditing internal controls, per *PCAOB Audit Standard No. 5*

**1) Risk Assessment.** A top-down approach begins at the financial statement level and with the auditor's understanding of the overall risks to internal control over financial reporting. Risk assessment underlies the entire audit process and is used in determining the significant accounts and disclosures, the relevant assertions, the selection of controls to test, and the determination of the evidence necessary to test a given control.

The independent, external auditor is required to provide an independent opinion on the effectiveness of the company's internal control over financial reporting. *PCAOB Auditing Standard 5* states that the auditor should perform procedures such as **inquiry, observation, inspection of documents, and/or re-performance of controls.**

A **fraud risk assessment** is part of the risk assessment for the financial statement audit, and this risk assessment should be taken into account in the audit of internal controls as well.

the risk of **management override** is a significant risk. Part of the audit committee's over-sight of financial reporting should include addressing the risk of management override of internal controls. Thus auditor should evaluate those related controls.

**2) The auditor then identifies the entity-level controls and focuses on them**

Entity-level controls are those controls that will make a difference in the auditor's conclusion about whether the company has effective internal control over financial reporting. They are controls that help to ensure that management directives that pertain to the whole organization (entity) are being carried out.

**3) Identify significant accounts and disclosures and their relevant assertions.**

(Existence or occurrence, Completeness, Valuation or allocation, Rights and obligations, Presentation and disclosure)

**4) Understand the likely sources of misstatement through identifying the controls that management has implemented.**

**5) Select controls to test.****6) Test the design effectiveness and the operating effectiveness of the controls****7) Evaluate identified deficiencies.**



Guidance for the management assessment of internal controls is provided by the SEC.

In June 2007, the SEC published Release No. 33-8810, containing the interpretive guidance for management on Section 404. The guidance was intended to enable companies to implement the requirements more effectively and efficiently.

Initially, the management assessment of internal controls provision of Sarbanes-Oxley (SOX 404) was required only of large publicly-held companies. However, after the SEC's interpretive guidance was released, smaller public companies that were not accelerated filers were also required to document their management assessment of internal controls over financial reporting for fiscal years ending after December 15, 2007.

The SEC approved the guidance as an interpretive release rather than as a commission rule, in order that companies that already had established and effective processes would **not** to have to alter their existing procedures to align them with the new guidance and also in order to allow the SEC to more easily update or amend the guidance as needed.

PCAOB Auditing Standard No. 5 and also SEC Release 33-8810 call for a **top-down, risk-based** approach to assessing and attesting to internal controls.

In both, a risk-based approach begins by identifying the risks that a material misstatement of the financial statements would not be prevented or detected in a timely manner. Beginning with risk assessment allows the auditor to focus on higher-risk areas while spending less time and effort on areas of lower risk. The auditor should test those controls that are important to the auditor's conclusion about whether the company's controls sufficiently address the assessed risk of misstatement to each relevant assertion.

PCAOB Auditing Standard 5 states that the auditor should perform procedures such as inquiry, observation, and inspection of documents, or walkthroughs – which consist of a combination of the preceding procedures – in order to fully understand and identify the likely sources of potential misstatements, whereas management might be aware of those risk areas on an on-going basis.

### Top-Down Approach Versus Bottom-Up Approach

In contrast to the top-down, risk-based approach, an auditor who approaches the audit of internal controls from the bottom up would focus first on performing detailed tests of controls at the process, transaction, and application levels. It is important for the auditor to use a top-down approach, because when the auditor uses a bottom-up process, he or she often spends more time and effort than is necessary to complete the audit.

Furthermore, when an auditor takes a bottom-up approach, the auditor may spend relatively little time testing and evaluating entity-level controls but may rely almost exclusively on detailed tests of controls over individual processes, transactions and applications. Spending more effort than is necessary in lower-risk areas can diminish the effectiveness of the audit because it may prevent a higher-risk area from receiving the audit attention that it should receive.

**A top-down approach ensures that the controls that address the assessed risk of misstatement to each relevant assertion are tested.** If a bottom-up approach is used, those controls that address the risk of a material misstatement may not be tested.





**ICMA 2013**

69. A U.S. publically traded company completed its annual audit and internal control assessment. An external auditor attested to the financial statements by giving an audit opinion but did not report on management's assessment of the internal controls. Did the company violate section 404 of the Sarbanes-Oxley Act?
- a. No, the company was still in compliance due to the safe harbor rules.
  - b. Yes, because the company did not include a certification from the CFO and CEO.
  - c. No, but the company has violated Section 302 of the Sarbanes-Oxley Act.
  - d. Yes, because the company did not have an auditor attest to and report on the assessment of the internal controls.

69. d

70. In accordance with the Sarbanes-Oxley Act, which one of the following certification is not included in periodic statutory financial reports?
- a. The signing officers have reviewed the report and the report does not contain any material untrue statements or material omissions.
  - b. Any significant changes in internal controls or related factors that could have a negative impact are disclosed.
  - c. A list of all deficiencies in the internal controls and information on any fraud that involves employees who are involved with internal operations.
  - d. The major internal control provisions of the Foreign Corrupt Practices Act.

70. d



## STUDY UNIT TEN

### Systems controls and security measures

#### *Topics tested on CMA exam*

- a. General accounting system controls
- b. Application and transaction controls
- c. Network controls
- d. Flowcharting to assess controls
- e. Backup controls
- f. Disaster recovery procedures

#### **The candidate should be able to:**

- a. describe how the **segregation** of accounting duties can enhance systems security
- b. identify **threats** to information systems, including input manipulation, program alteration, direct file alteration, data theft, sabotage, viruses, Trojan horses, and theft
- c. demonstrate an understanding of how **systems development controls** are used to enhance the accuracy, validity, safety, security, and adaptability of systems input, processing, output, and storage functions
- d. identify procedures to limit **access to physical hardware**
- e. identify **means** by which management can **protect programs and databases** from unauthorized use
- f. identify **input** controls, **processing** controls, and **output** controls and describe why each of these controls is necessary
- g. identify and describe the types of **storage controls** and demonstrate an understanding of when and why they are used
- h. identify and describe the **inherent risks of using the internet** as compared to data transmissions over secured transmission lines
- i. define data **encryption** and describe why there is a much greater need for data encryption methods when using the internet
- j. identify a **firewall** and its uses
- k. demonstrate an understanding of how **flowcharts** of activities are used to assess controls
- l. explain the importance of **backing up all program** and data files regularly, and storing the backups at a secure remote site
- m. define the objective of a **disaster recovery plan** and identify the components of such a plan





## Introduction to Systems Controls

The use of computers in information systems has fundamental effects on internal control but not on its objectives or basic philosophy.

These effects flow from the characteristics that distinguish computer-based from manual processing. When a company uses computers extensively in its operations and accounting systems, this can **tend to increase the company's exposure to inaccuracies and fraud.**

Since computers apply the same steps to similar transactions, there should be no chance for clerical (human) error in processing. However, if there is a mistake in the program itself, there will be an error in every transaction that is processed using that defective program. And if a clerical error is made in input, it will of course result in an output error.

Potential for fraud is always present in organizations and is a serious problem, even without computer processing of data.

- The automatic processing of data, the volume of the data processed and the complexity of the processing are aspects of computer processing that can increase both the **risk of loss** and the potential dollar loss from exposures that would exist anyway.
- The concentration of data storage creates exposure, as well. The potential for **fraud** is further increased because of the fact that programs are used for the processing.
- There is potential for fraud to be committed within the program itself. Without proper controls, this type of fraud may go undetected for a long period of time.

### Transaction trails

- A complete trail useful for audit purposes might exist for only a short time or in only computer-readable form.
- Further complicating the situation is the fact that because of the nature of the system, paper **audit trails** may exist for only a short period of time, as support documents may be periodically deleted.
  - The audit trail must include all of the documentary evidence for the transaction and the control techniques that the transaction was subjected to, in order to provide assurance that the transaction was properly authorized and properly processed. When an audit trail is absent, the reliability of an accounting information system is questionable.

## Objectives of controls for an information system

- Promoting effectiveness and efficiency of operations in order to achieve the company's objectives.
- Maintaining the reliability of financial reporting through checking the accuracy and reliability of accounting data.
- Assuring compliance with all laws and regulations that the company is subject to, as well as adherence to managerial policies.
- Safeguarding assets.

nemonic: **FOCS**

Internal control for an information system has the same goals and components as overall organizational internal control & The ultimate **responsibility** for internal control lies with management and the board.



## Threats to Information Systems

Sources of threats to information systems and data are many. A few of them are:

- Errors can occur in system design; Errors can occur in input or input manipulation may occur;
- Data can be stolen over the Internet; Data and intellectual property, including trade secrets, can be stolen by employees who carry it out on very small storage media or just email it out; Unauthorized alterations can be made to programs by programmers adding instructions that divert assets to their own use; Data and programs can be damaged and/or become corrupted, either deliberately or accidentally; Data can be altered directly in the data file, without recording any transaction that can be detected; Viruses, Trojan Horses, and worms can infect a system, causing a system crash, stealing data, or damaging data; Hardware can be stolen; Physical facilities as well as the data maintained in them can be damaged by natural disasters, illegal activity or sabotage.

## The Classification of Controls

**General controls**, which relate to the environment **and** concern all computer activities.

**Application controls**, which are controls that are specific to individual applications and are designed to prevent, detect and correct errors and irregularities in transactions during the input, processing and output stages.

Both general controls and application controls are essential.

## General Controls

**General controls** concern all computer activities & IT relate to the general environment within which transaction processing takes place.

- They are designed to ensure that the company's control environment is stable and well managed.
- A stable and well-managed control environment strengthens the effectiveness of the company's application controls.
- General controls include controls over the development, modification and maintenance of computer programs.

## Categories of General Control

The **organization and operation** of the computer facilities, including provision for segregation of duties within the data processing function as well as segregation of the data processing function from other operations. The IS activity should have a high enough level in the organization and adequate authority to permit it to meet its objectives. There should be a systems control group to monitor production, keep records, balance input and output, and see that work is completed on schedule.

**General operating procedures**, including written procedures and manuals. Operating procedures also specify the process to be followed in system development and system changes, in order to provide reasonable assurance that development of, and changes to, computer programs are authorized, tested, and approved prior to the use of the program.

**Equipment and hardware controls**, including controls installed in computers that can identify incorrect data handling or improper operation of the equipment.

**Access controls** to equipment and data, such as controls over physical access to the computer system and the data that are adequate to protect the equipment and data files from damage or theft.



## **Application controls**

**Application controls** are controls that are specific to individual applications. They are designed to prevent, detect, and correct errors in transactions as they flow through the input, processing, and output stages of work. Thus, they are broken down into these three main categories (each of which is discussed in greater detail below):

- **Input** controls
- **Processing** controls
- **Output** controls

## **General Controls**

### **The Plan of Organization & Operation of the Computer Activity**

Organizational controls are concerned with the proper segregation of duties and responsibilities within the computer processing environment.

There should be an IT Planning or Steering Committee that will oversee the IT function. Members should include senior management, user management and representatives from the IT function. The committee should have regular meetings and report to senior management.

### **Segregation of functions.**

Many controls once performed by separate individuals may be concentrated in computer systems. Hence, an individual who has access to the computer may perform ***incompatible functions***. As a result, other control procedures may be necessary to achieve the control objectives ordinarily accomplished by segregation of functions. Other controls may include

- 1) Adequate segregation of functions within the computer processing activities.
- 2) Establishment of a control group to prevent or detect processing errors or fraud.
- 3) Use of password controls to prevent incompatible functions from being performed by individuals with online access to assets and records.

### **Segregation of duties should be maintained between and among the following functions:**

- Systems analysts
- Information systems use
- Data entry
- Data control clerks
- Programmers
- Computer operation
- Network management
- System administration
- Librarian
- Systems development and maintenance
- Change management
- Security administration
- Security audit

**For example:** The responsibilities of systems analysts, programmers, operators, file librarians, and the control group should be performed by different individuals, and proper supervision should be provided.

Operating controls ensure efficient and effective operation within the computer department.

These controls also assure proper procedures in case of data loss because of error or disaster.

Typical operating controls include the proper labeling of all files both internally (machine-readable file header and trailer labels) and externally, halt and error procedures, duplicate files, and reconstruction procedures for files.



## General Operating Procedures

### Documentation

Standard procedures for all IT operations, including network operations, should be documented. These should include documentation of the start-up process, job scheduling, processing continuity during operator shift changes, operations logs and procedures that ensure connection and disconnection of links to remote operations.

Task descriptions should be written for each job function; personnel should be trained in their jobs; assigned duties should be rotated periodically for key processing functions.

Physical safeguards should be established over forms such as negotiable instruments and over sensitive output devices such as signature cartridges. Sequential numbers on individual forms should be printed in advance so missing forms can be detected.

The process to follow in system development and system changes should be documented in order to provide reasonable assurance that development of, and changes to, computer programs are authorized, tested and approved prior to the use of the program.

**Turnaround documents** should be used whenever appropriate. A turnaround document is a computer-produced document that is resubmitted into the system, such as the portion of an invoice that a customer returns with payment.

Detailed explanation at the end of the unit

## Equipment Controls

- A defined backup procedure should be in place, and the usability of the backups should be verified regularly.
- Transaction trails should be available for tracing the contents of any individual transaction record backward or forward, and between output, processing, and source. Records of all changes to files should be maintained.
- Statistics on data input and other types of source errors should be accumulated and reviewed to determine remedial efforts needed to reduce errors.

## Equipment Access and Data Access Controls

The responsibility for **logical security** and **physical security** should be assigned to an information security manager who reports to the organization's senior management.

### Logical security

Consists of access and ability to use the equipment and data.

It includes Internet security (firewalls) and virus protection procedures; access controls for users to minimize actions they can perform; authentication processes to verify the identity of users; and cryptographic techniques such as encryption of messages and digital signatures.

### Physical security

Involves things such as keeping servers and associated peripherals in a separate, secure room with bars on the windows and use of blinds or reflective film on the windows for heat blocking as well as physical protection.

Monitoring of hardware components to prevent them being removed from the premises; security for offsite backup tapes; and biometrics to identify a person based on physical or behavioral characteristics (fingerprints, voice verification, etc.).

Physical security also involves the locations of wiring that connects the system, backup media, and maintenance of uninterruptible power supplies.



### Logical security

Unauthorized personnel, dial-up connections and other system entry ports should be prevented from accessing computer resources.

Passwords should be changed regularly for all those authorized to access the data. Procedures should be established for issuing, suspending and closing user accounts, and access rights should be reviewed periodically.

### Physical security

Media library contents should be protected. Responsibilities for storage media library management should be assigned to specific employees.

Contents of the media library should be inventoried systematically, so any discrepancies can be remedied and the integrity of magnetic media is maintained.

Policies and procedures should be established for archiving.

Dual access and dual control should be established to require two independent, simultaneous actions before processing is permitted.

Detailed explanation at the end of the unit

## Segregation of Duties

The most important organizational and operating control is the **segregation of duties**. Although the traditional segregation practiced in accounting of separating the responsibilities of authorization, record keeping and custody of assets may not be practiced in the same manner in Information Systems (since the work is quite different), there are still specific duties in the IS environment that should be separate from one another.

### Separate Information Systems *from* Other Departments

IS department personnel should be separated from the departments and personnel that they support (called "users"). This means:

- Users initiate and authorize all systems changes, and a formal written authorization is required.
- Asset custody remains with the user departments.
- An error log is maintained and referred to the user for correction. The data control group follows up on errors.

### Separate Responsibilities *within* the Information Systems Department

Responsibilities within the Information Systems Department should be separated from one another. An individual with unlimited access to a computer, its programs, and its data could execute a fraud and at the same time conceal it. Therefore, effective segregation of duties should be instituted by separating the **authority** for and the **responsibility** for the function.

Although designing and implementing segregation of duties controls makes it difficult for one employee to commit fraud, remember that segregation of duties is not perfect insurance against fraud because two employees could collude to override the controls.

## System and Program Development and Change Controls\*

\*Detailed explanation at the end of the unit



## Physical Access Controls

Computer facility controls should be in place to protect the physical assets of the computer center: the hardware, peripherals, documentation, programs and data files in the library. The computer-processing center should be in a locked area, and access to it should be restricted to authorized persons

## Hardware Controls for Networks

Computer networks require special controls due to the decentralized nature of the hardware.

- 1) **Checkpoint processing.**
- 2) **Routing verification procedures.**
- 3) **Message acknowledgment procedures.**

## File Security and Storage Controls

File Security Control procedures include:

- **Labeling the contents** of discs (CDs, DVDs, external hard drives, etc.), tapes, flash drives or memory cards, and any other removable media, both externally and internally as part of the data file.
- The **read-only** file designation is used to prevent users from altering or writing over data.
- **Database Management Systems** use **lockout procedures** to prevent two applications from updating the same record or data item at the same time.

Detailed explanation at the end of the unit

## Application Controls

**Application controls** relate to tasks performed by a specific system. They should provide reasonable assurance that the recording, processing, and reporting of data are properly performed.

- ✓ Application controls relate to individual computerized accounting applications, for example, programmed edit controls for verifying customers' account numbers and credit limits.

Application controls focus on preventing, detecting and correcting errors in transactions that are processed within an information system.

**Application controls are divided into:**

### Input Controls

provide reasonable assurance that data received for processing have been properly authorized, converted into machine-sensible form, and identified, and that data (including data transmitted over communication lines) have not been lost, suppressed, added, duplicated, or otherwise improperly changed. Input controls also relate to rejection, correction, and resubmission of data that were initially incorrect.

### Processing Controls

provide reasonable assurance that processing has been performed as intended for the particular application, i.e., that all transactions are processed as authorized, that no unauthorized transactions are omitted, and that no unauthorized transactions are added.

### Output controls

provide reasonable assurance that the processing result (such as account listings or displays, reports, magnetic files, invoices, or disbursement checks) is accurate and that only authorized personnel receive the output.

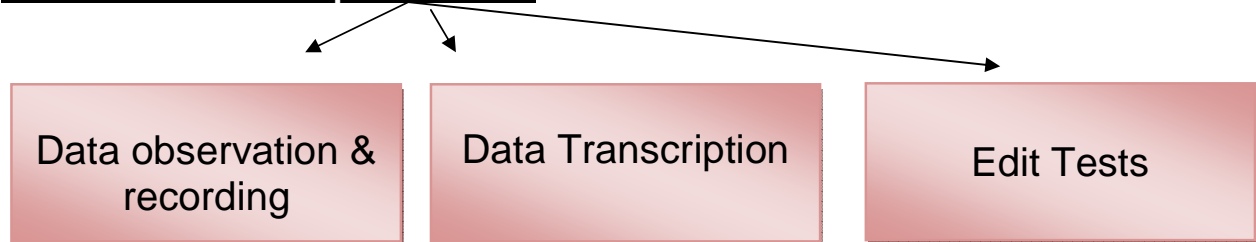




## Input Controls

**Input controls** are the controls designed to ensure that data is entered into the program correctly. Input is the stage where there is the most human involvement and, as a result, the risk of errors is higher than in the processing and output stages. If data is not entered correctly there is no chance that the output will be correct.

### Classifications of input controls



#### Data Observation and Recording

One or more observational control procedures may be practiced:

**Feedback mechanisms** are manual systems that attest to the accuracy of a document.

**Dual observation** means more than one employee sees the input documents.

**Point-of-sale devices** used to encode data can decrease errors substantially.

**Preprinted forms** such as receipt and confirmation forms can ensure that all the data required for processing has been captured.

#### Data Transcription

**Data transcription** is the preparation of the data for processing. If data is entered from source documents, the **source documents** should be organized in a way that facilitates the input process. The actual data input usually takes place at a workstation with a display terminal.

#### Edit Tests

**Edit programs** or **input validation routines** are programs that check the validity and accuracy of input data. They perform **edit tests** by examining specific fields of data and rejecting transactions if their data fields do not meet data quality standards.

**Edit tests include:**

##### Completeness, or field, checks

Which ensure that data is input into all required fields and that the data is in the proper format. For example, a field check would not permit numbers to be input into a field for a person's name.

##### Limit checks,

Which ensure that only data within predefined limits will be accepted by the system. For example, the number of days worked in a week cannot exceed 7.

##### Validity checks,

Which match the input data to an acceptable set of values or match the characteristics of input data to an acceptable set of characteristics.

Detailed explanation at the end of the unit



## Processing Controls

**Processing controls** prevent or discourage the improper manipulation of data and ensure satisfactory operation of hardware and software.

**Processing controls** are controls designed to ensure that processing has occurred properly and that no transactions have been lost or incorrectly added.

- ✓ Some input controls are also processing controls, e.g., limit, reasonableness, and sign tests.

**Processing controls fall into two classifications:**

**Processing controls**  
at the time of data  
access

**Controls** involving  
data manipulation  
later in the processing

## Data Access Controls & Data Manipulation Controls

### Data Access Controls

- Transmittal documents
- Batch control totals
- Hash total
- Record count

### Data Manipulation Controls

- Examining software documentation.
- System testing
  - Batch balancing
  - Run-to-run totals
  - Default option
  - Cross-footing
  - A zero-balance check

## Output Controls

**Output controls** are used to check that input and processing has resulted in valid output. Their objective is to assure the output's validity, accuracy, and completeness.

The **data control group** supervises output.

There are two types of output application controls:

### Validating processing results

- Activity, or proof, listings
- Reconciliations
- A suspense account
- Upstream resubmission

### Printed output controls

- Forms control

\*Detailed explanation at the end of the unit





## Network controls

### Internet Security

- Once a company is connected to an outside network (usually the World Wide Web) there are a number of additional security issues that must be properly addressed.
  - ✓ The policies that are put in place need to ensure that the intended and authorized users of the network have access to it as needed.
  - ✓ However, accessibility also creates vulnerability.
  - ✓ So organizations must be certain that information sent over the network is properly protected to maintain the confidentiality of company information and ensure that the files within the company cannot be accessed or changed without authorization.
- At a minimum, the system should include **user account management**, a **firewall**, **antivirus** protection and **encryption**.
- **User account management** is the simple process of giving people accounts and passwords.
  - ✓ For this to be as effective as possible, it must be kept up to date. Inactive accounts need to be eliminated, and active passwords need to be changed frequently

A **computer virus** is a program that alters the way another computer operates. **Trojan Horse**

A **Trojan horse** is different from a virus. A very important distinction between Trojan horses and viruses is that Trojan horses **do not replicate themselves**, whereas viruses do.

A **worm** is a program that replicates itself from system to system without the use of any host file.

A **virus hoax** is an e-mail that tells you a file on your computer is a virus when it isn't.

The difference between a virus and a Trojan is that the **virus replicates itself, while the Trojan does not**.

A **firewall** is a barrier between the internal and the external networks. This firewall prevents unauthorized access to the internal network.

**Proxy Server** A proxy server is a computer and software that creates a gateway to and from the Internet.

**Encryption** is the technology that converts data into a code and then requires a key to convert the code back to data. A better system for companies to use is the **public key/private key encryption system**.

*\*Detailed explanation at the end of the unit*

## Backup and Contingency Planning

In any computer system, it is essential that the company have plans for the **backup of data** and the **recovery of data**, especially disaster recovery.

### Disaster Recovery

Not many firms could survive for long without computing facilities. Therefore, an organization should have a formal disaster recovery plan to fall back on in the event of a hurricane, fire, earthquake, flood, or criminal or terrorist act. A disaster recovery plan specifies:

- ✓ Which employees will participate in disaster recovery and what their responsibilities will be. One person should be designated in charge of disaster recovery, and another should be second in command.
- ✓ What hardware, software, and facilities will be used.
- ✓ The priority of applications that should be processed.

Disaster recovery sites may be either hot sites or cold sites.

- A **hot site** is a backup facility that has a computer system similar to the one used regularly. The hot site must be fully operational and immediately available.
  - ✓ A hot site is a service bureau. It is a fully operational processing facility that is immediately available
- A **cold site** is a facility where power and space are available to install processing equipment, but it is not immediately available. If an organization uses a cold site, its disaster recovery plan must include arrangements to get computer equipment installed there quickly.

*\*Detailed explanation at the end of the unit*



# Detailed Explanation



## General Operating Procedures

The procedures for documenting, reviewing, testing, and approving systems or programs and changes thereto.

In detail it consists of: Definition of responsibilities, Reliability, Training, Competence of personnel, Rotation of duties, Forms design, Prenumbered forms, Preprinted forms, Simultaneous preparations, Turnaround documents, Documentation, Labeling.

## Program development and documentation controls

**Documentation** is the collection of documents that support and explain computer applications, including systems development. It is helpful to operators and other users, control personnel, new employees, auditors, programmers, and analysts.

Program development and documentation controls are concerned with the proper planning, development, writing, and testing of computer application programs.

- These activities require proper documentation, including flowcharts, listings, and run manuals for programs already written.
- Controls over proper authorization of any changes in existing programs are also necessary.

Documentation should be secured in a library with access controlled.

It should be subject to uniform standards regarding flowcharting techniques, coding, and modification procedures (including proper authorization).

### System documentation

- ✓ includes narrative descriptions, flowcharts, the system definition used for development, input and output forms, file and record layouts, controls, change authorizations, and backup procedures.

### Program documentation

- ✓ contains descriptions, program flowcharts and decision tables, program listings of source code, test data, input and output forms, detailed file and record layouts, change requests, operator instructions, and controls.

### Operating documentation (computer run manual)

- ✓ provides information about setup, necessary files and devices, input procedures, console messages and responsive operator actions, run times, recovery procedures, disposal of output, and controls.

### Procedural documentation

- ✓ includes the system's master plan and operations to be performed, documentation standards, procedures for labeling and handling files, and standards for systems analysis, programming, operations, security, and data definition.

### User documentation

- ✓ describes the system and procedures for data entry, error checking and correction, and formats and uses of reports.

Documentation provides a basis for effective operation, use, audit and future system enhancements. It communicates among people who are developing, implementing and maintaining a system. A detailed record of the system's design is necessary in order to install, operate or modify an application. It is also needed for diagnosing and correcting programming errors; and it provides a basis for reconstruction of the system in case of damage or destruction.

- ✓ Standard operating procedures should be documented, distributed, and maintained using knowledge management, workflow techniques and automated tools.



## Systems and program development controls

Effective systems development requires participation by top management. This can be achieved through a **steering committee** composed of higher-level representatives of system users. The committee approves or recommends projects and reviews their progress.

Studies of the economic, operational, and technical **feasibility of new applications** will necessarily entail evaluations of existing as well as proposed systems.

Another necessary control is the **establishment of standards** for system design and programming. These standards represent user needs and system requirements determined during the systems analysis.

**Changes** in the computer system should be subject to **strict controls**. For example, a written request for an application program change should be made by a user department and authorized by a designated manager or committee.

- The program should then be redesigned using a **working copy**, not the version currently in use. Also, the systems documentation must be revised.
- Changes in the program will be **tested** by the user, the internal auditor, and a systems employee who was not involved in designing the change.
- **Approval** of the documented change and the results of testing should be given by a systems manager. The change and test results may then be accepted by the user.
- Unauthorized program changes can be detected by **code comparison**. The version in use should be periodically compared with a copy controlled by the auditors. Software can be used to perform this procedure.

Proposed programs should be **tested with incorrect or incomplete data** as well as typical data to determine if controls have been properly implemented in the program.

- ✓ a) Test data should test all branches of the program, including the program's edit capabilities. The edit function includes sequence checks, valid field tests, reasonableness checks, and other tests of the input data.
- ✓ b) Expected results should be calculated and compared with actual performance. These results should include both accurate output and error messages.

To avoid legal liability, controls should also be implemented to prevent use of unlicensed software not in the public domain.

- A **software licensing agreement** permits a user to employ either a specified or an unlimited number of copies of a software product at given locations, at particular machines, or throughout the company. The agreement may restrict reproduction or resale, and it may provide for subsequent customer support and product improvements.

Turnaround documents should be used whenever appropriate. A turnaround document is a computer-produced document that is resubmitted into the system, such as the portion of an invoice that a customer returns with payment.

Staff of the user departments and the operations group of the IT function should be trained in accordance with the training plan.

## Physical Access Controls

Computer facility controls should be in place to protect the physical assets of the computer center: the hardware, peripherals, documentation, programs and data files in the library. The computer-processing center should be in a locked area, and access to it should be restricted to authorized persons



## Hardware Controls for Networks

Computer networks require special controls due to the decentralized nature of the hardware.

1) **Checkpoint processing** should be used to enable recovery in case of a system failure. Checkpoint control procedures are performed several times per hour, and during that time, the network system will not accept posting. It stops and backs up all the data and other information needed to restart the system. This **checkpoint** is recorded on separate media. Then, if a hardware failure occurs, the company simply reverts to the last saved copy, and reprocesses only the transactions that were posted after that checkpoint. The effect of this is similar to the **rollback and recovery method**.

2) **Routing verification procedures** protect against transactions routed to the wrong computer network system address. Any transaction transmitted over the network must have a header label identifying its destination. Before sending the transaction, the system verifies that the destination is valid and authorized to receive data. After the transaction has been received, the system verifies that the message went to the destination code in the header.

3) **Message acknowledgment procedures** can prevent the loss of part or all of a transaction or message on a network. Messages are given a trailer label, which the receiving destination checks to verify that the complete message was received.

## File Security and Storage Controls

File Security Control procedures include:

- **Labeling the contents** of discs (CDs, DVDs, external hard drives, etc.), tapes, flash drives or memory cards, and any other removable media, both externally and internally as part of the data file.
- The **read-only** file designation is used to prevent users from altering or writing over data.
- **Database Management Systems** use **lockout procedures** to prevent two applications from updating the same record or data item at the same time.

**Note:** A **deadly embrace** occurs when two different applications or transactions each have a lock on data that is needed by the other application or transaction. Neither process is able to proceed, because each is waiting for the other to do something. In these cases the system must have a method of determining which transaction goes first, and then it must let the second transaction be completed using the updated information after the first transaction.

• The librarian's function is particularly critical, because documentation, programs and data files are assets of the organization and require protection the same as any other asset would. The data files contain information that is critical to the enterprise, such as accounting records. Although backup procedures could reconstruct lost or damaged data, it is less costly to prevent a data loss than to repair it. Furthermore, confidential information is contained in the data files and must be protected from misuse by unauthorized individuals.

• Protection of program documentation is critical. Data can be changed within a file by someone who knows how to do it; and technical manuals containing file descriptions are one way to get the necessary information. Only authorized people who have the responsibility to repair data files that may become corrupt should have access to technical manuals.

## Equipment Controls

- Controls built into the equipment by the manufacturer (hardware controls)
  - ✓ Hardware controls assure the proper internal handling of data as they are moved and stored.
    - Hardware controls include parity checks, echo checks, read-after-write checks, and any other procedure built into the equipment to assure data integrity.
- A defined backup procedure should be in place, and the usability of the backups should be verified regularly.
- Transaction trails should be available for tracing the contents of any individual transaction record backward or forward, and between output, processing, and source. Records of all changes to files should be maintained.



## Hardware Controls

- **Boundary (storage) protection.**
- **Diagnostic routines.**
- **Dual read.**
- **Dual read-write heads.**
- **Duplicate circuitry.**
- **echo check.**
- **File protection.**
- **parity check.**
- **Preventive maintenance.**
- **Read-write suppression.**
- **Validity checks.**
- **Boundary (storage) protection** protects programs or data from interference (unauthorized reading and/or writing) caused by activity related to other programs or data stored on the same medium. Primary storage locations in the CPU may be protected by features built into the hardware, but boundary protection for disk storage is affected through programming.
- **Diagnostic routines** check for hardware problems. If built into the equipment, they permit the system itself to give notice of imminent failure.
- **Dual read-write heads.** A dual head first writes on the storage medium and then reads what was written. If the comparison shows that the data written differ from the data at the source of the transfer, the device will back up and rewrite the data. This process provides a check on recorded information.
- **Dual read.** An input device, such as a tape drive, may read an input twice for comparison.
- **Duplicate circuitry.** Dual circuits in the arithmetic-logic unit of the CPU permit calculations to be performed twice and compared.
- An **echo check** provides for a peripheral device to return (echo) a signal sent by the CPU.
  - For example, the CPU sends a signal to the printer, and the printer, just prior to printing, sends a signal back to the CPU verifying that the proper print position has been activated.
- **File protection.** All data storage media, except hard disks, have a ring, tab, or notch that can be used to prevent or allow writing.
- A **parity check** adds the bits in a character or message and checks the sum to determine if it is odd or even, depending on whether the computer has odd or even parity. This check verifies that all data have been transferred without loss.
  - For example, if the computer has even parity, a bit will be added to a binary coded character or message that contains an odd number of bits. No bit is added if a character or message in binary form has an even number of bits.
- **Preventive maintenance.** Regular servicing avoids equipment failure.
- **Read-write suppression.** A control on a disk drive may prevent reading from or writing on a disk,
  - e.g., one containing production programs.
- **Validity checks.** Hardware that transmits or receives data compares the bits in each byte to the permissible combinations in order to determine whether they constitute a valid structure.





## Access Controls

- Access controls, such as
  - ✓ ID numbers,
  - ✓ passwords,
  - ✓ access logs, and
  - ✓ device authorization tables,
    - prevent improper use or manipulation of data files and programs.
    - They help ensure that only those persons with a bona fide purpose and authorization have access to data processing.
- **ID numbers and Passwords.** The use of identification numbers and passwords is an effective control in an online system to prevent unauthorized access to computer files.
  - ✓ Lists of authorized persons are maintained in the computer. The entry of identification numbers and passwords, a prearranged set of personal questions, and the use of badges, magnetic cards, or optically scanned cards may be combined to avoid unauthorized access.
- A security card may be used with a microcomputer so that users must sign on with an ID and a password. The card controls the machine's operating system and records access data (date, time, duration, etc.).
- Proper user authentication by means of a password requires password generating procedures to assure that valid passwords are known only by the proper individuals. Thus, a password should not be displayed when entered at a keyboard.
- A **device authorization table** may restrict file access to those physical devices that should logically need access. For example, because it is illogical for anyone to access the accounts receivable file from a manufacturing terminal, the device authorization table will deny access even when a valid password is used.
- Such tests are often called **compatibility tests** because they ascertain whether a code number is compatible with the use to be made of the information. Thus, a user may be authorized to enter only certain kinds of data, have access only to certain information, have access but not updating authority, or use the system only at certain times. The lists or tables of authorized users or devices are sometimes called **access control matrices**.
- A **system access log** records all attempts to use the system. The date and time, codes used, mode of access, and data involved are recorded.
- **Encryption** involves using a fixed algorithm to manipulate plain text. The information is sent in its manipulated form and the receiver translates the information back into plain text.
  - ✓ Although data may be accessed by tapping into the transmission line, the encryption key is necessary to understand the data being sent.
- A **callback** feature requires the remote user to call the computer, give identification, hang up, and wait for the computer to call the user's authorized number.
  - ✓ This control ensures acceptance of data transmissions only from authorized modems. However, call forwarding may thwart this control.
- **Controlled disposal of documents.** One method of enforcing access restrictions is to destroy data when they are no longer in use.
  - ✓ Thus, paper documents may be shredded and magnetic media may be erased.
- **Biometric technologies.** These are automated methods of establishing an individual's identity using physiological or behavioral traits.
  - ✓ These characteristics include fingerprints, retina patterns, hand geometry, signature dynamics, speech, and keystroke dynamics.
- **Automatic log-off** (disconnection) of inactive data terminals may prevent the viewing of sensitive data on an unattended data terminal.
- **Utility software restrictions.** Utility software may have privileged access and therefore be able to bypass normal security measures.
  - ✓ Performance monitors, tape and disk management systems, job schedulers, online editors, and report management systems are examples of utility software.
  - ✓ Management can limit the use of privileged software to security personnel and establish audit trails to document its use. The purpose is to gain assurance that its uses are necessary and authorized.



- **Security personnel.** An organization may need to hire security specialists.
  - ✓ For example, developing an information security policy for the organization, commenting on security controls in new applications, and monitoring and investigating unsuccessful access attempts are appropriate duties of the information security officer.

### More About Segregation of Duties

- The most important organizational and operating control is the **segregation of duties**.
- Although the traditional segregation practiced in accounting of separating the responsibilities of **authorization, record keeping and custody of assets** may not be practiced in the same manner in Information Systems (since the work is quite different), there are still specific duties in the IS environment that should be separate from one another.

#### Separate Responsibilities within the Information Systems Department

- Responsibilities within the Information Systems Department should be separated from one another.
  - ✓ An individual with unlimited access to a computer, its programs, and its data could execute a fraud and at the same time conceal it. Therefore, effective separation of duties should be instituted by separating the **authority** for the function from the **responsibility** for the function.
  - ✓ Although designing and implementing segregation of duties controls makes it difficult for one employee to commit fraud, remember that segregation of duties is not perfect insurance against fraud because two employees could collude to override the controls.

### Various Positions within a Computer System

#### Systems Analysts

- **Systems analysts** are responsible for reviewing the current system to make sure that it is meeting the needs of the organization, and when it is not, they will provide the design specifications to the programmers of the new system.
  - ✓ Systems analysts should not perform programming tasks or have access to computer equipment, production programs, data files, and input-output controls.
- **Systems analysts** are specifically qualified to analyze and design computer information systems.
  - ✓ They survey the existing system, analyze the organization's information requirements, and design new systems to meet those needs.
  - ✓ These design specifications will guide the preparation of specific programs by computer programmers.

#### Programmers

- **Programmers** are the individuals who write, test and document the systems.
- They are able to modify programs, data files and controls, but should not have access to the computers and programs that are in actual use for processing.
  - ✓ For instance, if a bank programmer were allowed access to actual live data, he or she could delete their own loan balance while conducting a test.

#### Computer (console) Operators

- **Computer operators** perform the actual operation of the computers for processing the data.
- They should not have programming functions and should not be able to program.
- Their job responsibilities should be rotated so no one operator is always overseeing the running of the same application.
- **The most critical separation of duties is between programmers and computer operators.**
- **Computer (console) operators** are responsible for the actual processing of data in accordance with the program run manual and messages received from the system (preferably in hardcopy form for review by the control group).

#### The Data Control Group

- The **data control group** receives user input, logs it, monitors the processing of the data, reconciles input and output, distributes output to authorized users, and checks to see that errors are corrected.





- They also maintain registers of computer access codes and coordinate security controls with other computer personnel.
- They must keep the computer accounts and access authorizations current at all times. They should be organizationally independent of computer operations.
- The **data control group** must be independent of systems development, programming, and operations. It receives user input, logs it, transfers it to the computer center, monitors processing, reviews error messages, compares control totals, distributes output, and determines whether error corrections have been made by users.

#### Transaction Authorization

- Users should submit a signed form with each batch of input data to verify that the data has been authorized and that the proper batch control totals have been prepared.
- Data control group personnel should verify the signatures and batch control totals before submitting the input for processing.
  - ✓ This would prevent a payroll clerk, for instance, from submitting an unauthorized pay increase for himself or herself.

#### Librarians

- **Librarians** should maintain control over and accountability for documentation, programs, and data files.
- They should have no access to equipment. The librarian should restrict access to the data files and programs to authorized personnel at scheduled times.
- Furthermore, the librarian maintains records of all usage, and those records should be reviewed regularly by the data control group for evidence of unauthorized use.

#### Data Conversion Operators

- **Data conversion operators** perform tasks of converting and transmitting data.
- **Data conversion operators** perform the tasks of data preparation and transmission,
  - ✓ for example, conversion of source data to magnetic disk or tape and entry of transactions from remote terminals.

#### Database Administrator

- The **database administrator** controls access to various files, making program changes, and making source code details available only to those who need to know.
- The **database administrator (DBA)** is the individual who has overall responsibility for developing and maintaining the database and for establishing controls to protect its integrity.
  - ✓ Thus, only the DBA should be able to update **data dictionaries**.
  - ✓ In small systems, the DBA may perform some functions of a **database management system (DBMS)**. In larger applications, the DBA uses a DBMS as a primary tool.

#### Other

- The **webmaster** is responsible for the content of the organization's website. (S)he works closely with programmers and network technicians to ensure that the appropriate content is displayed and that the site is reliably available to users.
- **Help desks** are usually a responsibility of computer operations because of the operational nature of their functions. Help desk personnel log reported problems, resolve minor problems, and forward more difficult problems to the appropriate information systems resources, such as a **technical support unit** or **vendor assistance**.
- **Network technicians** maintain the bridges, hubs, routers, switches, cabling, and other devices that interconnect the organization's computers. They are also responsible for maintaining the organization's connection to other networks, such as the Internet.
- **End users** need access to applications data and functions only.



## Application Controls

### Input Controls

#### Data Observation and Recording

One or more observational control procedures may be practiced:

**Feedback mechanisms** are manual systems that attest to the accuracy of a document.

For instance, a sales person might ask a customer to confirm their order with a signature, attesting to the accuracy of the data in the sales order.

Feedback mechanisms include **authorization**, **endorsement** and **cancellation**.

**Dual observation** means more than one employee sees the input documents.

In some cases this might mean a supervisor reviews and **approves** the work.

**Point-of-sale devices** used to encode data can decrease errors substantially.

In addition, point-of-sale devices eliminate the need to manually convert the data to machine-readable format.

**Preprinted forms** such as receipt and confirmation forms can ensure that all the data required for processing has been captured.

For example, if a form utilizes boxes for each character in an inventory part number, it is more likely that the correct number of characters will be entered.

**Batch controls** should be used in the input phase to track data as it travels from place to place before it reaches the computer, to make sure no data is lost.

**Batch controls** do not work well with real-time systems, because data is entered at remote terminals sporadically and by different people. Transactions cannot be easily batched. However, entries can and should be displayed on a screen for visual verification and checked against backup data. Furthermore, information input can be checked against the database, and edit programs can be used to make sure that each field has the proper format (see following topics).

Transaction trails should be created by the system that show the date, terminal ID, and individual responsible for the input. This is particularly important in a real-time system. All inputs are logged to a special file that contains these identifying **tags** to identify the transactions. Including this additional, audit-oriented information along with original transaction data is called **tagging**.

Transaction logs also provide a source of **control totals**.

#### Data Transcription

**Data transcription** is the preparation of the data for processing. If data is entered from source documents, the **source documents** should be organized in a way that facilitates the input process. The actual data input usually takes place at a workstation with a display terminal.

✓ A **preformatted input screen** can assist in the transcription process.

➤ For example, a date field to be filled in would be presented onscreen as \_/\_/.

✓ **Format checks** are used to verify that data is entered in the proper mode: numeric data in a numeric field, a date in a date field, etc.



## Edit Tests

**Edit programs** or **input validation routines** are programs that check the validity and accuracy of input data. They perform **edit tests** by examining specific fields of data and rejecting transactions if their data fields do not meet data quality standards.

**Edit checks** are programmed into the software.

Edit tests include:

- **Completeness checks**
  - **Limit and range checks**
  - **Validity checks**
  - **Overflow checks**
  - **Check digits ,Self-checking digits**
  - **Key verification**
  - **Error listing**
  - **Field checks**
  - **Financial totals**
  - **hash total**
  - **Preformatting**
  - **Reasonableness (relationship) tests**
  - **Record count**
  - **Sequence checks**
  - **Sign checks**
- 
- **Completeness checks** of transmission of data determine whether all necessary information has been sent.
    - ✓ The software notifies the sender if something is omitted.
  - **Limit and range checks** are based on known limits for given information. These which ensure that only data within predefined limits will be accepted by the system.
    - ✓ For example, hours worked per week will not equal 200.
  - **Validity checks**, which match the input data to an acceptable set of values or match the characteristics of input data to an acceptable set of characteristics.
    - ✓ **Validity checks** are tests of identification numbers or transaction codes for validity by comparison with items already known to be correct or authorized.
      - For example, Social Security numbers on payroll input records can be compared with Social Security numbers authorized by the personnel department.
  - **Overflow checks**, which make sure that the number of digits entered in a field is not greater than the capacity of the field.
    - ✓ An **overflow test** is a programmed control that checks computational results and issues a warning if the result exceeds the capacity of the storage location, which would result in the loss of data.
      - For example, if 5428 were stored as 542, the 8 lost on overflow would be discovered.
  - **Self-checking digits** may be used to detect incorrect identification numbers. The digit is generated by applying an algorithm to the ID number. During the input process, the check digit is recomputed by applying the same algorithm to the code actually entered.
    - ✓ **Check digits**, which determine whether a number has been transcribed properly. A check digit is a function of the other digits within a set of numbers. If a typographical error is made in input, the check digit will recognize that something has been input incorrectly.
  - **Key verification** is the process of inputting the information again and comparing the two results.
  - **Error listing.** Editing (validation) of data should produce a cumulative automated error listing that includes not only errors found in the current processing run but also uncorrected errors from earlier runs. Each error should be identified and described, and the date and time of detection should be given. Sometimes, the erroneous transactions may need to be recorded in a suspense file. This process is the basis for developing appropriate reports.



- **Field checks** are tests of the characters in a field to verify that they are of an appropriate type for that field. For example, the field for a Social Security number should not contain alphabetic characters.
  - **Financial totals** summarize dollar amounts in an information field in a group of records
  - A **hash total** is a control total without a defined meaning, such as the total of employee numbers or invoice numbers, that is used to verify the completeness of data.
    - ✓ Thus, the hash total for the employee listing by the personnel department could be compared with the total generated during the payroll run.
  - **Preformatting.** To avoid data entry errors in online systems, a screen prompting approach may be used that is the equivalent of the preprinted forms routinely employed as source documents.
    - ✓ The dialogue approach, for example, presents a series of questions to the operator. The preformatted screen approach involves the display of a set of boxes for entry of specified data items. The format may even be in the form of a copy of a transaction document.
  - **Reasonableness (relationship) tests** check the logical correctness of relationships among the values of data items on an input and the corresponding master file record.
    - ✓ For example, it may be known that employee John Smith works only in departments A, C, or D; thus, a reasonableness test could be performed to determine that the payroll record contains one of the likely department numbers. In some texts, the term reasonableness test is defined to encompass limit checks.
  - **Record count** is a control total of the number of records processed during the operation of a program.
  - **Sequence checks** determine that records are in proper order.
    - ✓ For example, a payroll input file is likely to be sorted into Social Security number order. A sequence check can then be performed to verify record order.
  - **Sign checks** assure that data in a field have the appropriate arithmetic sign.
    - ✓ For example, hours worked in a payroll record should always be a positive number.
  - A **redundancy check** requires sending additional data items to serve as a check on the other transmitted data;
    - ✓ for example, part of a customer name could be matched against the name associated with the transmitted customer number.
  - An **echo check** is an input control over transmission along communications lines. Data are sent back to the user's terminal for comparison with the transmitted data.
- (CMA Adapted, June 1987)
- The online data entry control called preformatting is:
    - A. A check to determine if all data items for a transaction have been entered by the terminal operator.
    - B. A program initiated prior to regular input to discover errors in data before entry so that the errors can be corrected.
    - C. The display of a document with blanks for data items to be entered by the terminal operator.
    - D. A series of requests for required input data that requires an acceptable response to each request before a subsequent request is made
  - c – Preformatted input screens present a blank field in the format that the input should take.
  - Data input validation routines include:
    - A. Passwords.
    - B. Terminal logs.
    - C. Backup controls.
    - D. Hash totals.
  - d – Hash totals are a method of validating the input of data.



## Processing Controls

### Data Access Controls & Data Manipulation Controls

#### Data Access Controls

- **Transmittal documents** such as batch control tickets are used to control movement of data from the source to the processing point or from one processing point to another. **Batch sequence numbers** are used to number batches consecutively to make sure all batches are accounted for.
- A **hash total** is another type of control total.
  - ✓ For instance, if a batch contains data on receipts from accounts receivable customers, the sum of all the customers' account numbers might be computed to create a **hash total**.
  - ✓ This sum is useful only for control purposes, and it is compared with the total computed during processing to make sure nothing was lost or altered during processing.
- A **record count** utilizes the number of transaction items and counts them twice, once when preparing the transactions in a batch and again when performing the processing.
- **Batch control totals** are any type of control total or count applied to a specific group of transactions, such as total sales dollars in a batch of billings.
- Batch control totals are used to ensure that all input is processed correctly by the computer.
  - ✓ In batch processing, items are batched in bundles of a preset number of transactions. If a batch consists of **financial** transactions, a **batch control document** that goes with the batch includes the bundle number, the date and the total dollar amount of the batch. As the computer processes the batch, it checks the **batch control total** (the total dollar amount) for the batch and compares the processed total with the batch control total. If they match, the batch is posted.
  - ✓ If they do not, the posting is rejected, and the difference must be investigated. Batch control totals can also be calculated and used for **nonfinancial** fields in transactions. For instance, a batch control total might be the total hours worked by employees.

#### Data Manipulation Controls

- Standard procedures should be developed and used for all processing.
- Examining **software documentation**, such as **system flowcharts**, **program flowcharts**, **data flow diagrams** and **decision tables**, can also be a control, because it makes sure that the programs are complete in their data manipulation.
- Computer programs are error tested by using a **compiler**, which checks for programming language errors.
- **Test data** can be used to test a computer program.
- **System testing** can be used to test the interaction of several different computer programs. Output from one program is often input to another, and system testing tests the linkages between the programs.
- There are a number of other tests of processing, such as:
  - • **Batch balancing** is comparing the items actually processed against a predetermined control total.
  - • **Run-to-run totals** are output control totals from one process used as input control totals over subsequent processing. The run-to-run totals tie one process to another.
  - • **Default option** is the automatic use of a predefined value when a certain value is left blank in input. However, a default option may be correct, or it may be an incorrect value for a particular transaction, so the default should not be automatically accepted.
- Other tests of the logic of processing are posting, cross-footing, and zero-balance checks.
  - a) Comparing the contents of a record before and after updating is a posting check.
  - b) Cross-footing compares an amount to the sum of its components.
  - c) A zero-balance check adds the positive and negative amounts posted. The result should be zero.
- **Internal header and trailer labels** ensure that incorrect files are not processed.



- a) A matching test should make certain an updating transaction is matched with the appropriate master file.
- An **audit trail** should be created through the use of input-output control logs, error listings, transaction logs, and transaction listings.

## Output Controls

### Validating processing results

- **Activity, or proof, listings** that document processing activity provide detailed information about all changes to master files and create an audit trail.
- **Reconciliations** are the analysis of differences between values in two files that should be substantially the same.
  - ✓ The nature of the reconciling items is used to identify whether differences are caused by errors or whether they are valid differences.
- A **suspense account** is used as a control total for items awaiting further processing.
  - ✓ Output control also includes review of the error logs by the control group and review of the output by the users. End-of-job markers are printed at the end of the report and enable the user to easily determine if the entire report has been received.
  - ✓ A **discrepancy report** is a listing of items that have violated some detective control and need to be investigated.
- **Upstream resubmission** is the resubmission of corrected error transactions as if they were new transactions, so that they pass through all the same detective controls as normal transactions pass through.

### Printed Output Controls

- **Forms control**, such as physical control over company checks, is one type of printed output controls. Checks should be kept under lock and key, and only authorized persons should be permitted access.
- However, there is another control needed with checks, because they are **prenumbered**.
  - ✓ **The preprinted check number on the form must match the computer-generated number that is also printed on the check.**
    - The preprinted numbers on the checks are sequential; the computer-generated numbers also are sequential. The starting computer-generated number must match the first check in the stack, or the numbers in the whole check run will be off. If there is any discrepancy, it must be investigated because the starting number in the computer should be one more than the last check printed. If it does not match the preprinted number on the check stock, one or more checks could be missing.
  - ✓ Any form should be **prenumbered** and controlled in the same manner as checks.
- Output control also concerns report distribution.
  - ✓ For example, a payroll register with all the employees' social security numbers and pay rates is confidential information and thus its distribution must be restricted.
  - ✓ There should be an **authorized distribution list**, and only enough copies of the report to permit one report to be distributed to each person on the list should be processed.
  - ✓ For a confidential report, it is preferable to have a representative pick the report up personally and sign for it. If this is not possible, a bonded employee can be used to hand deliver the reports. The employee's supervisor should make random checks on this distribution.
- Confidential reports should be **shredded** when they are no longer needed.





## Controls Classified as Preventive, Detective and Corrective

Just as financial controls can be classified as **preventive**, **detective** and **corrective**, information systems controls can be classified in the same manner.

- **Preventive controls** prevent errors and fraud before they occur. Examples of **preventive** controls are segregation of duties, job rotation, training and competence of personnel, dual access controls, authorization, approval, endorsement and cancellation, and preformatted input.
- **Detective controls** uncover errors and fraud after they have occurred. Examples of **detective** controls are transmittal documents, batch control totals and other batch transmittal documents, completeness checks, hash totals, batch balancing, check digits, limit checks, and validity checks.
  - ✓ The use of a **turnaround document** is also a detective control, because it checks on completeness of input. Completeness of processing detective controls includes run-to-run totals, reconciliations, use of suspense accounts, and error logs. Correctness of processing detective controls are redundant processing, overflow checks and summary processing.
- **Corrective controls** are used to correct errors. Examples of **corrective** controls are discrepancy reports and upstream resubmissions.

➤ An advantage of having a computer maintain an automated error log in conjunction with computer edit programs is that:

- ✓ Less manual work is required to determine how to correct errors.
- ✓ Better editing techniques will result.
- ✓ The audit trail is maintained.
- ✓ Reports can be developed that summarize the errors by type, cause and person responsible.

➤ 43. d – Computer generated reports can be designed to provide more specific, and sorted, information about the errors.

➤ An employee in the receiving department keyed in a shipment from a remote terminal and inadvertently omitted the purchase order number. The best systems control to detect this error would be:

- ✓ Completeness test.
- ✓ Batch total.
- ✓ Reasonableness test.
- ✓ Sequence check.

➤ a – A completeness test would not let the processing proceed if the item is not complete.

Preventive controls are:

- ✓ Usually more cost beneficial than detective controls.
- ✓ Usually more costly to use than detective controls.
- ✓ Found only in accounting transaction controls.
- ✓ Found only in general accounting controls.

➤ a – Preventive controls are the most cost effective controls.

➤ Edit checks in a computerized accounting system:

- ✓ Are preventive controls.
- ✓ Must be installed for the system to be operational.
- ✓ Should be performed on transactions prior to updating a master file.
- ✓ Should be performed immediately prior to output distribution.

➤



c – Edit tests are an input control. They are used to check whether data has been input correctly. Thus they should be performed on transaction files before those files are used to update the master file in a posting run, because it is much easier to correct errors before posting has taken place than it is afterwards.

## Network controls

### Internet Security

- Once a company is connected to an outside network (usually the World Wide Web) there are a number of additional security issues that must be properly addressed.
  - ✓ The policies that are put in place need to ensure that the intended and authorized users of the network have access to it as needed.
  - ✓ However, accessibility also creates vulnerability.
  - ✓ So organizations must be certain that information sent over the network is properly protected to maintain the confidentiality of company information and ensure that the files within the company cannot be accessed or changed without authorization.
- At a minimum, the system should include **user account management**, a **firewall**, **antivirus** protection and **encryption**.
- **User account management** is the simple process of giving people accounts and passwords.
  - ✓ For this to be as effective as possible, it must be kept up to date. Inactive accounts need to be eliminated, and active passwords need to be changed frequently

### Virus

- A **computer virus** is a program that alters the way another computer operates. Viruses may damage programs, delete files or reformat the hard disk. Other viruses do not do damage but replicate themselves and present text, video and audio messages. Although these viruses may not cause damage directly, they create problems by taking up computer memory and causing erratic behavior and system crashes that can lead to data loss. In order to be considered a virus, a virus must meet two criteria:
  - ✓ 1) It must **execute itself**. It often places its own code in the path of the execution of another program.
  - ✓ 2) It must **replicate itself**. It may replace other executable files with a copy of the virus-infected file.
- A virus may be received from an infected disk, a downloaded file or from an electronic bulletin board. Anti-virus software recognizes viruses before they can do damage and incapacitates them. Anti-virus software must be kept up to date, however, as new viruses appear constantly.

### Trojan Horse

- A **Trojan horse** is different from a virus. A very important distinction between Trojan horses and viruses is that Trojan horses **do not replicate themselves**, whereas viruses do. Trojan horses appear to be something desirable but in fact they contain malicious code that, when triggered, can cause loss or even theft of data. You can get a Trojan horse only by inviting it into your computer.
- Two examples of ways to get a Trojan horse include
  - ✓ (1) opening an email attachment, or
  - ✓ (2) downloading and running a file from the Internet.

### Worm

- A **worm** is a program that replicates itself from system to system without the use of any host file. The difference between a worm and a virus is that the worm does not require the use of an infected host file, while the virus does require the spreading of an infected host file.
- Worms generally exist inside of other files, often Word or Excel documents. However, worms use the host file differently from viruses. Usually the worm releases a document that has the “worm” macro inside the document. This entire document spreads from computer to computer, so the entire document is considered to be the worm.

### Virus Hoax

- A **virus hoax** is an e-mail that tells you a file on your computer is a virus when it isn't. These often tell you to look on your system for a file by a specific name and, if you see it, delete it because it is a virus that your anti-virus program can't recognize. Everyone will find that file on





their system, because it is a system file that is needed for the computer to operate correctly. If you believe this e-mail and delete the file, your computer may malfunction.

- Note:
- The difference between a virus and a Trojan is that the **virus replicates itself, while the Trojan does not.**
- The difference between a virus and a worm is that **the virus requires an infected host file to replicate itself, while the worm can replicate itself without a host file.**

#### Firewall

- A **firewall** is a barrier between the internal and the external networks. This firewall prevents unauthorized access to the internal network. A firewall will usually also prepare a report of Internet usage and then report any abnormal or excessive usage, as well as attempts to gain unauthorized entry to the network. A firewall can be in the form of software directly installed on a computer; or it can be in the form of a piece of hardware that is installed between the computer and its connection to the Internet. A firewall is a good Internet security control, but it is not foolproof.

#### Proxy Server

- An organization may also use a **proxy server**. A proxy server is a computer and software that creates a gateway to and from the Internet.
- The proxy server contains an access control list of approved websites and handles all web access requests, limiting access to only those IP addresses contained in the access control list. This enables an employer to deny its employees access to websites that are unlikely to have any productive benefits.
- The proxy server also examines all incoming requests for information and tests them for authenticity. In this way, a proxy server functions as a firewall. The proxy server can also limit the information that is stored on it to information that the company can afford to lose.
- Thus, if this server is broken into, the organization's main servers remain functional.

#### Encryption

- **Encryption** is the technology that converts data into a code and then requires a key to convert the code back to data. Unauthorized people may receive the coded information, but without the proper key they will be unable to read the information. The encryption process may be either in the hardware or the software. There are two methods of software encryption.
- In a **secret-key system**, each pair of sender and recipient has a single key that is used to encrypt and decrypt the messages. The disadvantage to this method is that every pair of senders and receivers has to have a separate set of keys that match. If several pairs all used the same set, then anyone having the key could decrypt anyone else's message, and it wouldn't be a secret. This is impractical over the Internet, because any one company could need to receive messages from thousands of potential customers and other individuals.
- However, it is used in some government communications.
- A better system for companies to use is the **public key/private key encryption system**.
- In this system, each entity that needs to receive encrypted data publishes a public key that can be used to encrypt data while keeping to itself a private key that is the only way to decrypt that data. Anyone can encrypt and send data to the company using its published public key. But only the company's private key can be used to *decrypt* the data, and only the company that published the public key has the private key.
- A company gets a public key and the private key to go with it by applying to a Certificate Authority, which validates its identity and then issues it a certificate and its own unique public key and private key. The certificate may be used to identify a company, an employee or a server within a company. The certificate includes the name of the entity it identifies, an expiration date, the name of the Certificate Authority that issued the certificate, a serial number, and other identification. The certificate always includes the **digital signature** of the issuing Certificate Authority, which permits the certificate to function as a "letter of introduction" from the Certificate Authority.



## Auditing

- In a computer system there is still a need for auditing, or checking the data and processing that occurs within the system. Outlined below are brief explanations of the different types of audit testing methods used to test the processing of information and data within the system.

- ✓ **Test Data**
- ✓ **Integrated Test Facility (ITF)**
- ✓ **Parallel Simulation**
- ✓ **Embedded Audit Data Collection**
- ✓ **Mapping**
- ✓ **Generalized Audit Software Package (GASP)**

### Test Data

- **Test data** is used to determine
  - ✓ whether control procedures in a particular computer application are working properly;
  - ✓ whether the computer is processing transactions correctly;
  - ✓ whether all transaction files and master files are fully and correctly being updated; and
  - ✓ whether program changes have been made correctly.
- The auditor prepares input that contains both valid and invalid data for processing by the computer.
  - ✓ Before it is processed by the computer, the data is manually processed.
  - ✓ After processing, the output of the test is compared with the manually processed results to determine whether they are the same.
  - ✓ If not, the auditor tries to find out what caused the difference.
- Test data must be processed in a special test run, because a fictitious master file is used to run the test transactions against so that the actual master files will not be affected. Test data may also consist of a review of actual data. Real transactions are selected in advance for processing as test data

There are several limitations to using test data

- Because test data must be processed in a separate test run, the use of test data must be announced ahead of time. Therefore, the auditor cannot be sure that the program being used to run the test data is the same program that is used for real data.
- Test data cannot test every possible situation that a program might encounter in processing real data.
- Test data tests only the application program, not the clerical part of the application. Thus there is no way to detect errors that may be taking place in clerical input.
- Test data can be prepared by persons with little technical background.

### Integrated Test Facility (ITF)

- An **Integrated Test Facility (ITF)** involves the use of test data but also the creation of fictitious entities, such as fictitious employees, vendors, products, and accounts, within the master files of the computer system. Or alternatively, a separate, fictitious company may be used. **The major difference between test data and an ITF is that the test data in an ITF is processed along with real data.**
  - ✓ No one knows that the data being processed includes these fictitious entries to fictitious records. In this way, the auditor can be sure that the programs being checked are the same programs as those used to process the real data.
- **Advantages**
  - ✓ Enables testing of the system as it routinely operates
  - ✓ Low processing costs
  - ✓ No special processing
- **Disadvantages**
  - ✓ Effects of transactions on operations (books) must be nullified.
  - ✓ Quantity of live data inputs may be limited when submitted with regular runs.
- The difficulty with using the ITF approach is that the fictitious transactions have to be excluded from the normal outputs of the system in some way. This may be done manually, or it may be done by designing or modifying the application programs.



- ✓ Either way, the fictitious transactions must be identified by means of special codes so they can be segregated from the real data. Careful planning is required to make sure that the ITF data does not become mixed in with the real data, corrupting the real data.
- If this careful planning is done, the costs of using ITF are minimal, because there is no special processing required and thus no interruption of normal computer activity. There are costs involved in developing an ITF, either while the application is being developed or as a later modification to it. However, once the initial costs are past, the ongoing operating costs are low.
- ITF is normally used to audit large computer systems that use real-time processing.

#### Parallel Simulation

- In a **parallel simulation** the auditor will run a set of actual data through some type of generalized audit program that processes data and produces output in the same manner as the program being audited. Then the results as processed by both programs are compared.
- Parallel simulation is expensive and time-consuming and is usually limited to sections of an audit that are of major concern and are important enough that they require an audit of 100% of the transactions. Parallel simulation uses actual data rather than test data. Furthermore, it can be performed off-site because it does not use the client's computer system.
- Advantages
  - ✓ Testing can be done on a surprise basis.
  - ✓ Cost of preparing test data is eliminated.
  - ✓ Can process many of auditee's transactions, eliminating need for small samples
  - ✓ More thorough than sampling
- Disadvantages
  - ✓ Cost of developing program may be prohibitive.
  - ✓ Auditor may need special skills.
  - ✓ Does not have broad application

#### Embedded Audit Data Collection

- Use of **embedded audit routines** involves modifying computer programs by building special auditing routines into them so that transaction data can be analyzed for audit purposes.
- **Embedded audit data collection** is one such technique. It uses one or more specially programmed modules within the regular program code to select data for subsequent analysis by the auditor. To do this, the programmed modules are **embedded** as **in-line code** in the regular program code. When **in-line code** is used, the application program will perform the audit data collection function while it is processing the normal data.
- Advantages
  - All system activity is subject to review.
  - Can be used with online systems
  - Not limited to input transactions
- Disadvantages
  - Additional processing cost of extra audit module program steps that must be executed
  - Difficult to implement unless it can be developed along with the system

#### Generalized Audit Software Package (GASP)

- Involves the use of computer software packages (programs) that may allow not only parallel simulation but also a variety of other processing functions, such as extracting sample items, verifying totals, developing file statistics, retrieving specified data fields
- Advantages
  - ✓ Can process several files (and file types)
  - ✓ Enables use with limited training
  - ✓ Packages interface with many types of hardware and software.
  - ✓ Decreases auditor dependence on data processing personnel and time
- Disadvantages
  - ✓ Limited application in online, real-time systems
  - ✓ Limited logical and mathematical capabilities

#### Mapping

- Involves monitoring the execution of an application program to determine certain statistical information about the run, e.g., program lines not executed, CPU time for certain program lines, and the number of times certain lines were executed



- Advantages
  - ✓ Can aid in evaluating how well test data tested a run
  - ✓ Can indicate lines of code which are extraneous or not often used
- Disadvantages
  - ✓ High cost
- In auditing computer-based systems, the integrated test facility (ITF):
  - ✓ Is a concurrent audit technique that establishes a special set of dummy master files and enters transactions to test the programs using the dummy files during regular processing runs.
  - ✓ Uses an audit log to record transactions and data having special audit significance during regular processing runs.
  - ✓ Allows the auditor to assemble test transactions and run them through the computer system to test the integrity of controls on a sample database.
  - ✓ Is a set of specialized software routines that are designed to perform specialized audit tests and store audit evidence.
- A. An ITF runs false (dummy) information through the system along with real transactions, and the computer operator does not know that some of the transactions are false.
- **The use of a generalized audit software package**
  - ✓ **A. Relieves an auditor of the typical tasks of investigating exceptions, verifying sources of information, and evaluating reports.**
  - ✓ **B. Is a major aid in retrieving information from computerized files.**
  - ✓ **C. Overcomes the need for an auditor to learn much about computers.**
  - ✓ **D. Is a form of auditing around the computer.**
- Answer (A) is incorrect because the auditor must still use audit judgment.
- **Answer (B) is correct. The primary use of generalized computer programs is to select and summarize a client's records for additional testing. Generalized audit software packages permit the auditor to audit through the computer, to extract, compare, analyze, and summarize data and generate output as part of the audit program. They allow the auditor to exploit the computer to examine many more records than otherwise possible with far greater speed and accuracy.**
- Answer (C) is incorrect because an auditor must have a knowledge of computer auditing to use a generalized software package.
- Answer (D) is incorrect because using a generalized software package is a means of auditing through the compute



**What is an audit trail,  
why is it important,  
and what happens to audit  
trails when transactions are  
processed by computers?**

The existence of an **audit trail** means that an amount appearing in a general ledger account can be verified by evidence supporting all the individual transactions that go into the total. The audit trail includes all of the documentary evidence for the transaction and the control techniques that the transaction was subjected to in order to provide assurance that the transaction was properly authorized and properly processed.

When an audit trail is absent, the reliability of an accounting information system is questionable. Because of the nature of computerized transaction processing systems, paper audit trails may exist for only a short period of time, as support documents may be periodically deleted.

**What are the goals  
of internal control in an  
information system?**

Even though a company may use computers extensively in its operations and accounting systems, this does not change the fundamental goals of and need for internal controls in that system. It will, however, change the practical implementation of controls and the types of controls that are needed. Internal control for an information system has the same **goals** as overall organizational internal control:

- Promoting **effectiveness and efficiency of operations** in order to **achieve the company's objectives**;
- Maintaining the **reliability of financial reporting** through checking the accuracy and reliability of accounting data;
- Assuring **compliance with all laws and regulations** that the company is subject to, as well as adherence to managerial policies; and
- **Safeguarding assets.**

**FOCS**



What are  
some of the threats to  
information systems and  
data that systems controls  
can address?

**Threats** to information systems and data include:

- 1) Errors in system design.
- 2) Errors can occur in input or input manipulation.
- 3) Data can be stolen over the Internet.
- 4) Data and intellectual property, including trade secrets, can be stolen by employees.
- 5) Unauthorized alterations can be made to programs by programmers adding instructions that divert assets to their own use.
- 6) Data and programs can be damaged.
- 7) Data can be altered directly in the data file without recording any transaction that can be detected.
- 8) Viruses, Trojan Horses, and worms can infect a system, causing a system crash, stealing data, or damaging data.
- 9) Hardware can be stolen.
- 10) Physical facilities and the data maintained in them can be damaged by natural disasters, illegal activity or sabotage.

What are the two types  
of systems controls?

The two types of systems controls are **general controls**, which relate to the environment, and **application controls**, which are specific to individual applications and are designed to prevent, detect and correct errors and irregularities in transactions during the input, processing and output stages.



## What are the four major classifications of general systems controls?

The four major classifications of **general systems controls** are:

- 1) The **organization and operation of the computer facilities**, including provision for segregation of duties within the data processing function as well as segregation of the data processing function from other operations.
- 2) **General operating procedures**, including written procedures and manuals.
- 3) **Equipment and hardware controls**, including controls installed in computers that can identify incorrect data handling or improper operation of the equipment.
- 4) **Access controls to equipment and data**, such as controls over physical access to the computer system and the data that are adequate to protect the equipment and data files from damage or theft.

## What are the three major classifications of application controls and what are their purposes?

The **major classifications of application controls** include:

- 1) Input controls.
- 2) Processing controls.
- 3) Output controls.

Application controls are designed to prevent, detect, and correct errors in transactions as they flow through the input, processing, and output stages of work.





**Segregation of duties in a computer facility is what kind of control?**

**Segregation of duties** in a computer center is a **general control** which is concerned with organization and operation of the computer facilities.

**What equipment and hardware controls should a computer facility have?**

**Equipment and hardware controls** in a computer facility include:

- 1) A defined backup procedure should be in place, and the usability of the backups should be verified regularly.
- 2) Transaction trails should be available for tracing the contents of any individual transaction record backward or forward, and between output, processing, and source. Records of all changes to files should be maintained.
- 3) Statistics on data input and other types of source errors should be accumulated and reviewed to determine remedial efforts needed to reduce errors.





## What are some some procedures for protecting programs and databases from unauthorized use?

**Logical security** consists of access and ability to use the equipment and data. It protects programs and data from unauthorized use. It includes Internet security (firewalls) and virus protection procedures; access controls for users to minimize actions they can perform; authentication processes to verify the identity of users; and cryptographic techniques.

Unauthorized personnel, dial-up connections and other system entry ports should be prevented from accessing computer resources. Passwords should be changed regularly for all those authorized to access the data. Procedures should be established for issuing, suspending and closing user accounts, and access rights should be reviewed periodically.

All passwords should be issued with levels of authority that permit the users to access only the data that they need to be able to access in order to do their jobs.

## What are some procedures for limiting access to physical hardware in an information system?

**Physical security** involves things such as keeping servers and associated peripherals in a secure room; password protection for servers; monitoring of hardware components to prevent them from being removed from the premises; security for offsite backup tapes; and biometrics to identify a person based on physical or behavioral characteristics (fingerprints, voice verification, etc.).

Media library contents should be protected. Contents of the media library should be inventoried systematically, so any discrepancies can be remedied and the integrity of magnetic media is maintained. Policies and procedures should be established for archiving.

Dual access and dual control should be established to require two independent, simultaneous actions before processing is permitted.



List examples of segregation of duties from other departments outside the IS department as an example of a general computer control.

List examples of segregation of duties from other departments within the IS department as an example of a general computer control.

The most important organizational and operating general control is the **segregation of duties**.

There are specific duties in the IT environment that should be separate from one another.

IS department personnel should be separated from the departments and personnel that they support (called "users"). This means:

- 1) Users initiate and authorize all systems changes, and a formal written authorization is required.
- 2) Asset custody remains with the user departments.
- 3) An error log is maintained and referred to the user for correction. The data control group follows up on errors.

Effective segregation of duties should be instituted by separating the **authority** for and the **responsibility** within the IS function. Examples include:

- 1) **Systems analysts** should not do programming, nor should they have access to hardware, software or data files.
- 2) **Programmers** should not have the authority, opportunity or ability to make any changes in master records or files.
- 3) **Computer operators** should not have programming functions and should not be able to modify any programs.
- 4) The **data control group** should be **organizationally independent of computer operations**.
- 5) **Data conversion operators** should have no access to the library or to program documentation, nor should they have any input/output control responsibilities.
- 6) **Librarians** should have no access to equipment. The librarian should restrict access to the data files and programs to authorized personnel at scheduled times.



**List 3 reasons for implementing systems development controls at the beginning of the system development process, and describe the goals of these controls.**

Controls are instituted at the beginning of the systems development process for several reasons including:

- 1) To ensure that all changes are properly authorized and are not made by individuals who lack sufficient understanding of control procedures, proper approvals and the need for adequate testing.
- 2) To prevent errors in the resulting system that could cause major data processing errors.
- 3) To limit the potential for a myriad of other problems during the development process and after its completion.

Implementing systems development controls during the development stage of an information system enhance the ultimate accuracy, validity, safety, security and adaptability of the new system's input, processing, output and storage functions.

**What are the 7 stages of system development where controls should be considered for implementation?**

There are where controls should be considered f **7 stages in the system development process** or implementation:

- 1) Statement of Objectives Stage
- 2) Investigation and Feasibility Study Stage
- 3) Systems Analysis Stage
- 4) Systems Design and Development Stage
- 5) Program Coding and Testing Stage
- 6) Systems Implementation Stage
- 7) Systems Evaluation and Maintenance Stage



## List examples of physical access controls for computer facilities.

The computer processing center should be in a locked area and access to it should be restricted. Some means of accomplishing this goal are:

- 1) Have company personnel wear color-coded ID badges with photos. People authorized to enter the computer area are assigned an ID badge of a particular color.
- 2) With magnetic ID cards, each employee's entry into and exit from the computer center can be automatically logged.
- 3) The door can be kept locked. No one can enter unless "buzzed" in by the control person
- 4) Keys may be issued to authorized personnel, or combination locks can be used to limit access.
- 5) The location of the computer center should also be in a place where it is protected from natural disasters as much as possible.
- 6) The computer center should be equipped with smoke and water detectors, fire suppression devices, burglar alarms and monitored surveillance cameras.

## List examples of computer hardware controls for networks.

Computer networks require special controls due to the decentralized nature of the hardware.

Examples include:

- 1) **Checkpoint processing** should be used to enable recovery in case of a system failure.
- 2) **Routing verification procedures** protect against transactions routed to the wrong computer network system address.
- 3) **Message acknowledgment procedures** can prevent the loss of part or all of a transaction or message on a network.



List examples of  
file security and  
storage controls.

File Security and storage controls include:

- 1) **Labeling the contents** of discs (CDs, DVDs, external hard drives, etc.), tapes, flash drives, and any other removable media, both externally and internally.
- 2) **Read-only** file designation is used to stop users from altering or writing over data.
- 3) **Database Management Systems** use **lockout procedures** to prevent two applications from updating the same record or data item simultaneously.
- 4) The **librarian's function** is particularly critical, because documentation, programs and data files are assets of the organization and require protection the same as any other asset would.
- 5) **Protection of program documentation** is critical.  
Data can be changed within a file only by someone who knows how to do it.

What is the focus of  
application controls?

Application controls focus on preventing, detecting and correcting errors in transactions as they flow through the **input, processing** and **output** stages of work in an information system.



List examples of problems that application controls can prevent, detect and correct.

Some examples of problems that adequate controls can prevent, detect and correct include:

- 1) Input loss can occur when transaction information is transmitted from one location to another.
- 2) Input duplication can occur if an input item is thought to be lost and is recreated, but the original item is subsequently found or was never actually lost.
- 3) Inaccurate input in the form of typographical errors in numbers or in spelling.
- 4) Unrecorded transactions can occur as accidental failures or can be the result of theft or embezzlement.
- 5) In a volume processing environment, management authorization of every individual transaction may not take place, allowing improper transactions to occur.
- 6) Output can be sent to the wrong people, or may be sent too late to be used.
- 7) Programming errors or clerical errors can result in incomplete processing.

What are input controls in an information system and why are they necessary?

**Input controls** are the controls designed to provide reasonable assurance that data entered into the system has proper authorization, has been converted to machinesensible form and has been entered accurately.

Input controls can also provide some assurance that data has not been lost, suppressed, added or changed.

Input is the stage where there is the most human involvement and, as a result, the risk of errors is higher than in the processing and output stages. Most errors in systems are the result of input errors. If information is not entered correctly, the output will be useless. Effective input controls are vital.

The three classifications of input controls are:

- 1) Data observation and recording.
- 2) Data transcription.
- 3) Edit tests.



## What are processing controls and why are they necessary?

**Processing controls** are controls designed to provide reasonable assurance that processing has occurred properly and that no transactions have been lost or incorrectly added. Processing controls prevent or discourage the improper manipulation of data and ensure satisfactory operation of hardware and software.

## What are output controls and why are they necessary?

**Output controls** are used to provide reasonable assurance that input and processing has resulted in valid output. Output controls include:

- 1) **Validating processing results**, such as comparing proof listings against batch control totals, performing reconciliations, reviewing error logs and reviewing the output for accuracy, and
- 2) **Printed output controls**, such as physical control over company checks.



## What are the risks of using the Internet for data transmission instead of using secure transmission lines?

Risks of using the Internet for data transmission instead of secure transmission lines include:

- 1) Electronic eavesdropping.
- 2) Computer viruses, trojan horses and worms.
- 3) Intrusions into the telephone company lines and the company's computer network.
- 4) Network integrity violations.
- 5) Privacy violations.
- 6) Industrial espionage.
- 7) Unauthorized use, access, modification, and destruction of hardware, software, data or network resources.
- 8) Unauthorized release of information (credit card numbers, social security numbers, identity theft).
- 9) Unauthorized copying of software and other copyright infringement.
- 10) Denying an end user access to his or her own hardware, software, data or network resources (Denial Of Service - DOS - attacks).
- 11) Use of a computer or network resources to illegally obtain information or property.

## What is a firewall and what is it used for?

A **firewall** is the best defense against port scans. It serves as a barrier between the internal and the external networks and prevents unauthorized access to the internal network.

A good firewall, properly configured, makes a computer's ports invisible to port scans.

In addition to protecting a computer from incoming probes, a firewall can also prevent backdoor applications, Trojan horses and other unwanted applications from sending data from the computer.

A firewall can be in the form of software directly installed on a computer; or it can be a piece of hardware that is installed between the computer and its connection to the Internet.





## What is data encryption and why is it needed when using the Internet?

**Encryption** is the best protection against traffic interception resulting in data leaks and possible corruption of data. Encryption converts data into a code, and then a key is required to convert the code back to data. Unauthorized people can receive the coded information, but without the proper key, cannot read it. Thus, an attacker may be able to see where the traffic came from and where it went, but not the content. The encryption process can be either in the hardware or in the software. There are two methods of software encryption: **secret key** and **public key/private key**.

## What backup (storage) controls should be used and why?

It is essential that the company have plans for the backup of data and the recovery of data:

- 1) Program and data files should be backed up regularly.
- 2) Copies of all transaction data should be stored as a transaction log as they are entered into the system. If the master file is destroyed during processing, the data transaction log can be reprocessed against the backup copy.
- 3) Backups should be stored at a secure, remote location. In the event data is destroyed due to a physical disaster, it can be reconstructed.
- 4) Grandparent-parent-child processing should be used. If a file is damaged during updating, the previous files can be used to reconstruct a new current file.
- 5) Fault-Tolerant Systems are systems designed to tolerate faults or errors. They often utilize redundancy in hardware design, so that if one system fails, another one will take over.
- 6) Computers should be on Uninterruptible Power Supplies (UPS) to provide some protection during a power failure.



## What is a disaster recovery plan and why is it needed?

An organization should have a formal **disaster recovery plan** to fall back on in the event of a hurricane, fire, earthquake, flood, or criminal or terrorist act.

The objective of a disaster recovery plan is to minimize the extent of disruptions, damages and losses, and to temporarily establish alternative means of processing information.

## What should a disaster recovery plan include?

A **disaster recovery plan** should include:

- 1) Which employees will participate in disaster recovery and what their responsibilities will be.
- 2) What hardware, software, and facilities will be used.
- 3) The priority of applications that should be processed.
- 4) Arrangements for alternative facilities as a disaster recovery site and offsite storage of the company's databases.

An alternative facility might be a different facility owned by the company; or it might be a facility contracted by a different company. The different locations should be a good distance away from the original processing site.

Disaster recovery sites may be either **hot sites** or **cold sites**. A hot site is a backup facility that has a computer system similar to the one used regularly and is fully operational and immediately available. A cold site is a facility where power and space are available to install processing equipment, but it is not immediately available.

**[4] Gleim #: 8.8.120 -- Source: CMA 0408 2-276**

Which one of the following statements about a balanced scorecard is **incorrect**?

- A. It relies on the perception of the users with regard to service provided.
- B. The notion of value chain analysis plays a major role in the drawing up of a balanced scorecard.
- C. It is directly derived from the scientific management theories.
- D. It seeks to address the problems associated with traditional financial measures used to assess performance.

**[5] Gleim #: 8.8.115 -- Source: CMA 0205 2-46**

The balanced scorecard provides an action plan for achieving competitive success by focusing management attention on critical success factors. Which one of the following is **not** one of the perspectives on the business into which critical success factors are commonly grouped in the balanced scorecard?

- A. Employee innovation and learning.
- B. Competitor business strategies.
- C. Financial performance.
- D. Internal business processes.

**[6] Gleim #: 8.8.119 -- Source: CMA 0408 2-204**

Consider the following categories of performance measures.

- I. Profitability measures.
- II. Customer-satisfaction measures.
- III. Efficiency, quality, and time measures.
- IV. Innovation measures.

A cruise line operates on a national scale in a very competitive marketplace. In view of this information, which measures should the company use in the evaluation of its managers?

- A. I, II, III, and IV.
- B. II and III.
- C. I only.
- D. I and II.

**[7] Gleim #: 8.8.121 -- Source: CMA1 0313-(45)**

Two examples of the learning and innovation measures of a balanced scorecard are

- A. Employee turnover rate and number of internal process improvements.
- B. Employee promotion rate and number of environmental incidents.
- C. Employee training hours and product defect rates.
- D. Number of employee suggestions and finished products per day per employee.

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Answer Key  
(4 Questions)

- 4) C
- 5) B
- 6) A
- 7) A

**[1] Gleim #: 8.1.24 -- Source: CMA 0205 2-43**

Which one of the following best identifies a profit center?

- A. A large toy company.
- B. The Production Operations Department of a small job-order machine shop company.
- C. The Information Technology Department of a large consumer products company.
- D. A new car sales division for a large local auto agency.

**[5] Gleim #: 8.1.25 -- Source: CMA 0205 2-44**

Characteristics of a responsibility accounting system include all of the following **except** that

- A. Responsibility for performance according to budget must be linked to the appropriate authority.
- B. Cost centers are responsible for revenues as well as common costs.
- C. The system should encourage employee involvement and participation.
- D. Each level of management is responsible for its department's operations and employees.

**[6] Gleim #: 8.1.7 -- Source: CMA 694 3-24**

Decentralized firms can delegate authority and yet retain control and monitor managers' performance by structuring the organization into responsibility centers. Which one of the following organizational segments is most like an independent business?

- A. Profit center.
- B. Cost center.
- C. Revenue center.
- D. Investment center.

**[8] Gleim #: 8.1.28 -- Source: CMA 0408 2-256**

Sara Bellows, manager of the telecommunication sales team, has the following department budget.

Billings -- long distance	\$350,000
Billings -- phone card	75,000
Billings -- toll free	265,000

Her responsibility center is best described as a

- A. Cost center.
- B. Revenue center.
- C. Investment center.
- D. Profit center.

**[9] Gleim #: 8.1.14 -- Source: CMA 1291 3-8**

A segment of an organization is referred to as a profit center if it has

- A. Authority to make decisions affecting the major determinants of profit including the power to choose its markets and sources of supply and significant control over the amount of invested capital.
- B. Authority to make decisions affecting the major determinants of profit including the power to choose its markets and sources of supply.
- C. Authority to make decisions over the most significant costs of operations including the power to choose the sources of supply.
- D. Authority to provide specialized support to other units within the organization.

**[11] Gleim #: 8.1.16 -- Source: CMA 694 3-27**

The Stonebrook Company uses a performance reporting system that reflects the company's decentralization of decision making. The departmental performance reports show actual costs incurred during the period against budgeted costs. Any variances from the budget are assigned to the individual department manager who controls the costs. Stonebrook is using a type of system called

- A. Flexible budgeting.
- B. Activity-based budgeting.
- C. Responsibility accounting.
- D. Transfer-pricing accounting.

**[12] Gleim #: 8.1.30 -- Source: CMA1 0313-(35)**

Jonathan Roger is the marketing manager for a local recreational sports complex. Roger's role in the marketing department is to advertise events, meet potential clients, and plan future events. Roger is responsible for the revenues and costs of each event and reports to the sports complex manager. Roger's marketing department is an example of which type of responsibility center?

- A. Cost center.
- B. Investment center.
- C. Profit center.
- D. Revenue center.

**[13] Gleim #: 8.1.3 -- Source: CMA 695 3-28**

In responsibility accounting, a center's performance is measured by controllable costs. Controllable costs are best described as including

- A. Direct material and direct labor only.
- B. Only discretionary costs.
- C. Only those costs that the manager can influence in the current time period.
- D. Those costs about which the manager is knowledgeable and informed.

**[14] Gleim #: 8.1.5 -- Source: CMA 693 3-14**

The **least** complex segment or area of responsibility for which costs are allocated is a(n)

- A. Investment center.
- B. Profit center.
- C. Contribution center.
- D. Cost center.

**[15] Gleim #: 8.1.18 -- Source: CMA 1294 3-22**

If a manufacturing company uses responsibility accounting, which one of the following items is **least** likely to appear in a performance report for a manager of an assembly line?

- A. Equipment depreciation.
- B. Repairs and maintenance.
- C. Materials.
- D. Supervisory salaries.

**[16] Gleim #: 8.1.2 -- Source: CMA 691 3-28**

The basic purpose of a responsibility accounting system is

- A. Authority.
- B. Budgeting.
- C. Variance analysis.
- D. Motivation.

**[18] Gleim #: 8.1.17 -- Source: CMA 694 3-28**

DigitalTech uses an accounting system that charges costs to the manager who has the authority to make decisions incurring the costs. For example, if a sales manager authorizes a rush order that results in additional manufacturing costs, these additional costs are charged to the sales manager. This type of accounting system is known as

- A. Functional accounting.
- B. Contribution accounting.
- C. Responsibility accounting.
- D. Transfer-pricing accounting.

**[19] Gleim #: 8.1.10 -- Source: CMA 1294 3-21**

Sherman Company uses a performance reporting system that reflects the company's decentralization of decision making. The departmental performance report shows one line of data for each subordinate who reports to the group vice president. The data presented show the actual costs incurred during the period, the budgeted costs, and all variances from budget for that subordinate's department. Sherman is using a type of system called

- A. Contribution accounting.
- B. Responsibility accounting.
- C. Cost-benefit accounting.
- D. Flexible budgeting.

**[20] Gleim #: 8.1.15 -- Source: CMA 1291 3-9**

A segment of an organization is referred to as an investment center if it has

- A. Authority to make decisions over the most significant costs of operations including the power to choose the sources of supply.
- B. Authority to make decisions affecting the major determinants of profit including the power to choose its markets and sources of supply and significant control over the amount of invested capital.
- C. Authority to make decisions affecting the major determinants of profit including the power to choose its markets and sources of supply.
- D. Authority to provide specialized support to other units within the organization.

**[21] Gleim #: 8.1.6 -- Source: CMA 1295 3-5**

Responsibility accounting defines an operating center that is responsible for revenue and costs as a(n)

- A. Profit center.
- B. Revenue center.
- C. Operating unit.
- D. Division.

**[22] Gleim #: 8.1.1 -- Source: CMA 1294 3-20**

Fairmount, Inc., uses an accounting system that charges costs to the manager who has been delegated the authority to make the decisions incurring the costs. For example, if the sales manager accepts a rush order that will result in higher-than-normal manufacturing costs, these additional costs are charged to the sales manager because the authority to accept or decline the rush order was given to the sales manager. This type of accounting system is known as

- A. Reciprocal allocation.
- B. Transfer price accounting.
- C. Responsibility accounting.
- D. Functional accounting.

**[24] Gleim #: 8.1.8 -- Source: CMA 1293 3-21**

A successful responsibility accounting reporting system is dependent upon

- A. The proper delegation of responsibility and authority.
- B. The correct allocation of controllable variable costs.
- C. Identification of the management level at which all costs are controllable.
- D. A reasonable separation of costs into their fixed and variable components since fixed costs are not controllable and must be eliminated from the responsibility report.

**[27] Gleim #: 8.1.9 -- Source: CMA 1296 3-16**

Rockford Manufacturing Corporation uses a responsibility accounting system in its operations. Which one of the following items is **least** likely to appear in a performance report for a manager of one of Rockford's assembly lines?

- A. Materials.
- B. Depreciation on the manufacturing facility.
- C. Repairs and maintenance.
- D. Direct labor.



**[28] Gleim #: 8.1.13 -- Source: CMA 691 3-30**

In a highly decentralized organization, the best option for measuring the performance of subunits is the establishment of

- A. Revenue centers.
- B. Product centers.
- C. Cost centers.
- D. Marketing centers.

**[29] Gleim #: 8.1.12 -- Source: CMA 686 4-16**

Micro Manufacturers uses an accounting system that charges costs to the manager who has been delegated the authority to make the decisions incurring the costs. For example, if the sales manager accepts a rush order that requires the incurrence of additional manufacturing costs, these additional costs are charged to the sales manager because the authority to accept or decline the rush order was given to the sales manager. This type of accounting system is known as

- A. Reciprocal allocation.
- B. Contribution accounting.
- C. Functional accounting.
- D. Profitability accounting.

**[30] Gleim #: 8.1.4 -- Source: CMA 1291 3-10**

A segment of an organization is referred to as a service center if it has

- A. Responsibility for developing markets and selling the output of the organization.
- B. Authority to provide specialized support to other units within the organization.
- C. Authority to make decisions affecting the major determinants of profit including the power to choose its markets and sources of supply.
- D. Responsibility for combining the raw materials, direct labor, and other factors of production into a final output.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(21 Questions)

- 1) D
- 5) B
- 6) D
- 8) B
- 9) B
- 11) C
- 12) C
- 13) C
- 14) D
- 15) A
- 16) D
- 18) C
- 19) B
- 20) B
- 21) A
- 22) C
- 24) A
- 27) B
- 28) C
- 29) D
- 30) B

**[1] Gleim #: 8.2.40 -- Source: CMA 0408 2-214**

Which one of the following should be used for evaluating the performance of the Repair and Maintenance Department that repairs production equipment in a firm devoted to making keyboards for computers?

- A. The response time and degree of satisfaction among the production departments.
- B. The variance between the firm's budgeted and actual net income.
- C. The total factory overhead variances.
- D. The fixed overhead volume variances.

**[2] Gleim #: 8.2.31 -- Source: CMA 686 4-14**

The segment margin of the Wire Division of Lerner Corporation should **not** include

- A. The Wire Division's fair share of the salary of Lerner Corporation's president.
- B. Net sales of the Wire Division.
- C. Variable selling expenses of the Wire Division.
- D. Fixed selling expenses of the Wire Division.

**[3] Gleim #: 8.2.38 -- Source: CMA 0408 2-208**

Paul Cooper, shipping manager for DFG Distributors, is responsible for managing the staff and all related transportation equipment to fill orders for bakery products from local retailers and deliver the products to those retailers. Which one of the following groups of three performance measures most likely would result in the highest level of goal congruence?

- A. Labor cost per order; transportation cost per order; number of orders completed per day.
- B. The percentage of orders filled on time; the percentage of orders filled accurately; average cost to fill and deliver an order.
- C. Customer satisfaction; elapsed time to complete an order; percentage of orders filled accurately.
- D. Orders completed per employee per day; employee injuries per hour worked; number of vehicle accidents per year.

**[5] Gleim #: 8.2.39 -- Source: CMA 0408 2-210**

P.C. Programs, Inc., produces software for individual users and small businesses. Rita Morgan manages the customer hotline department for the firm and is responsible for answering customer questions related to software products produced by all divisions of the firm. For purposes of promoting goal congruence, which one of the following would be the **least** appropriate measure of her performance?

- A. Number of customer complaints due to incorrect responses given to customers.
- B. Average time to provide an answer or solution to a customer.
- C. Number of calls to the hotline for each new release of software.
- D. Average time a customer is on hold.

**[6] Gleim #: 8.2.32 -- Source: CMA 1292 3-22**

When using a contribution margin format for internal reporting purposes, the major distinction between segment manager performance and segment performance is

- A. Unallocated fixed costs.
- B. Direct fixed costs controllable by the segment manager.
- C. Direct variable costs of producing the product.
- D. Direct fixed costs controllable by others.

[7] Gleim #: 8.2.35 -- Source: CMA 692 3-13

Ordinarily, the most appropriate basis on which to evaluate the performance of a division manager is the division's

- A. Gross profit.
- B. Net income minus the division's fixed costs.
- C. Contribution margin.
- D. Net revenue minus controllable division costs.

[9] Gleim #: 8.2.37 -- Source: CMA 0408 2-206

David Burke is manager of claims processing for Continental Health Care System. His performance is evaluated using various measures agreed upon in advance with Diane Lewis, general manager. Lewis asked Burke to recommend several measures to evaluate the performance of his unit next year. Which one of the following performance measures would likely have the **least** positive effect on Burke's motivation and performance?

- A. Percentage of claims processed accurately the first time.
- B. Total dollar amount of claims processed per month.
- C. Average processing time per claim.
- D. Processing cost per claim.

[12] Gleim #: 8.2.41 -- Source: CMA 0408 2-217

Albert Hathaway recently joined Brannen University as the chief information officer of the University Computing Services Department. His assigned task is to help reduce the recurrent problem of cost overruns due to uncontrolled computer usage by the user community, while at the same time, not curtailing the use of information technology for research and teaching. To ensure goal congruence, which one of the following algorithms should be used to allocate the cost of the University Computing Services Department to other departments within the university?

- A. Budgeted rate times budgeted hours of computer usage.
- B. Budgeted rate times actual hours of computer usage.
- C. Actual rate times budgeted hours of computer usage.
- D. Actual rate times actual hours of computer usage.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(8 Questions)

- 1) A
- 2) A
- 3) B
- 5) C
- 6) D
- 7) D
- 9) B
- 12) B

**[1] Gleim #: 8.3.45 -- Source: CMA 1292 3-21**

A firm earning a profit can increase its return on investment by

- A. Decreasing sales revenues and operating expenses by the same percentage.
- B. Increasing sales revenues and operating expenses by the same percentage.
- C. Increasing investment and operating expenses by the same dollar amount.
- D. Increasing sales revenue and operating expenses by the same dollar amount.

**[2] Gleim #: 8.3.47 -- Source: CMA 697 3-29**

Listed below is selected financial information for the Western Division of the Hinzel Company for last year.

Account	Amount (thousands)
Average working capital	\$ 625
General and administrative expenses	75
Net sales	4,000
Average plant and equipment	1,775
Cost of goods sold	3,525

If Hinzel treats the Western Division as an investment center for performance measurement purposes, what is the before-tax return on investment (ROI) for last year?

- A. 16.67%
- B. 19.79%
- C. 22.54%
- D. 34.78%

**[3] Gleim #: 8.3.48 -- Source: CMA 694 3-29**

One approach to measuring divisional performance is return on investment. Return on investment is expressed as operating income

- A. Divided by the current year's capital expenditures plus cost of capital.
- B. Minus imputed interest charged for invested capital.
- C. Divided by total assets.
- D. Divided by fixed assets.

**[5] Gleim #: 8.3.54 -- Source: CMA 1296 3-2**

The segment margin of an investment center after deducting the imputed interest on the assets used by the investment center is known as

- A. Return on assets.
- B. Return on investment.
- C. Residual income.
- D. Operating income.

**[8] Gleim #: 8.3.53 -- Source: CMA 1291 3-7**

Which one of the following items would most likely **not** be incorporated into the calculation of a division's investment base when using the residual income approach for performance measurement and evaluation?

- A. Land being held by the division as a site for a new plant.
- B. Division inventories when division management exercises control over the inventory levels.
- C. Division accounts payable when division management exercises control over the amount of short-term credit used.
- D. Fixed assets employed in division operations.

**[9] Gleim #: 8.3.67 -- Source: CMA1 0313-(44)**

A company is considering the addition of a new product line. The new product line is expected to generate a return higher than the cost of capital but lower than the current overall return on investment (ROI). If the company decides to add the potential new product line, residual income will

- A. Decrease.
- B. Increase.
- C. Remain unchanged.
- D. Become higher than the firm's return on investment.

**[10] Gleim #: 8.3.58 -- Source: CMA 1291 3-5**

The basic objective of the residual income approach to performance measurement and evaluation is to have a division maximize its

- A. Income in excess of a desired minimum return.
- B. Imputed interest rate charge.
- C. Return on investment rate.
- D. Cash flows.

**[11] Gleim #: 8.3.59 -- Source: CMA 0205 2-45**

After investing in a new project, a company discovered that its residual income remained unchanged. Which one of the following must be true about the new project?

- A. The net present value of the new project must have been negative.
- B. The net present value of the new project must have been positive.
- C. The return on investment of the new project must have been equal to the firm's cost of capital.
- D. The return on investment of the new project must have been less than the firm's cost of capital.

**[12] Gleim #: 8.3.55 -- Source: CMA 694 3-18**

The imputed interest rate used in the residual income approach to performance evaluation can best be described as the

- A. Average return on investments for the company over the last several years.
- B. Average lending rate for the year being evaluated.
- C. Historical weighted-average cost of capital for the company.
- D. Target return on investment set by the company's management.

**[13] Gleim #: 8.3.57 -- Source: CMA 697 3-30**

James Webb is the general manager of the Industrial Product Division, and his performance is measured using the residual income method. Webb is reviewing the following forecasted information for his division for next year:

<u>Category</u>	<u>Amount</u> <u>(thousands)</u>
Working capital	\$ 1,800
Revenue	30,000
Plant and equipment	17,200

If the imputed interest charge is 15% and Webb wants to achieve a residual income target of \$2,000,000, what will costs have to be in order to achieve the target?

- A. \$25,150,000
- B. \$9,000,000
- C. \$25,690,000
- D. \$10,800,000

**[14] Gleim #: 8.3.65 -- Source: CMA1 0313-(41)**

A company has four regional divisions. A summary of financial results for the company is shown below.

	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
Operating income	\$1,000	\$ 5,000	\$4,000	\$ 7,500
Assets	2,500	15,000	8,000	25,000
Liabilities	500	7,000	1,000	5,000
Total equity	2,000	8,000	7,000	20,000

Which division has the highest return on investment?

- A. North.
- B. West.
- C. East.
- D. South.



**[17] Gleim #: 8.3.64 -- Source: CMA 0408 2-269**

KHD Industries is a multidivisional firm that evaluates its managers based on the return on investment (ROI) earned by their divisions. The evaluation and compensation plans use a targeted ROI of 15% (equal to the cost of capital), and managers receive a bonus of 5% of basic compensation for every one-percentage point that the division's ROI exceeds 15%. David Evans, manager of the Consumer Products Division, has made a forecast of the division's operations and finances for next year that indicates the ROI would be 24%. In addition, new short-term programs were identified by the Consumer Products Division and evaluated by the finance staff as follows.

<u>Program</u>	<u>Projected ROI</u>
A	13%
B	19%
C	22%
D	31%

Assuming no restrictions on expenditures, what is the optimal mix of new programs that would add value to KHD Industries?

- A. A, B, C, and D.
- B. D only.
- C. C and D only.
- D. B, C, and D only.

**[18] Gleim #: 8.3.66 -- Source: CMA1 0313-(43)**

The following is an excerpt from a corporation's most recent financial statements.

Current assets	\$ 120,000
Total operating assets	1,750,000
Current liabilities	85,000
Total liabilities	985,000
Sales	1,240,000
Operating income	\$ 365,000

The corporation's required rate of return is 12%. What is its residual income?

- A. \$123,600
- B. \$155,000
- C. \$126,800
- D. \$113,800

[20] Gleim #: 8.3.63 -- Source: CMA 0408 2-257

Performance results for four geographic divisions of a manufacturing company are shown below.

Division	Target Return on Investment	Actual Return on Investment	Return on Sales
A	18%	18.1%	8%
B	16	20.0	8
C	14	15.8	6
D	12	11.0	9

The division with the best performance is

- A. Division A.
- B. Division D.
- C. Division C.
- D. Division B.

[21] Gleim #: 8.3.56 -- Source: CMA 681 4-2

The imputed interest rate used in the residual income approach for performance measurement and evaluation can best be characterized as the

- A. Average return on investment that has been earned by the company over a particular period.
- B. Historical weighted average cost of capital for the company.
- C. Marginal after-tax cost of new equity capital.
- D. Target return on investment set by management.

[23] Gleim #: 8.3.46 -- Source: CMA 693 3-27

Which one of the following statements pertaining to the return on investment (ROI) as a performance measurement is **false**?

- A. The use of ROI can make it undesirable for a skillful manager to take on troubleshooting assignments such as those involving turning around unprofitable divisions.
- B. ROI relies on financial measures that are capable of being independently verified, while other forms of performance measures are subject to manipulation.
- C. The use of ROI may lead managers to reject capital investment projects that can be justified by using discounted cash flow models.
- D. When the average age of assets differs substantially across segments of a business, the use of ROI may not be appropriate.

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Answer Key  
(16 Questions)

- 1) B
- 2) A
- 3) C
- 5) C
- 8) A
- 9) B
- 10) A
- 11) C
- 12) D
- 13) A
- 14) D
- 17) D
- 18) B
- 20) D
- 21) D
- 23) B

**[Fact Pattern #1]**

Edith Carolina, president of the Deed Corporation, requires a minimum return on investment of 8% for any project to be undertaken by her company. The company is decentralized, and leaves investment decisions up to the discretion of the division managers as long as the 8% return is expected to be realized. Michael Sanders, manager of the Cosmetics Division, has had a return on investment of 14% for his division for the past 3 years and expects the division to have the same return in the coming year. Sanders has the opportunity to invest in a new line of cosmetics that is expected to have a return on investment of 12%.

**[1] Gleim #: 8.4.71 -- Source: CMA 693 3-12**

(Refers to Fact Pattern #1)

If the Deed Corporation evaluates managerial performance using residual income based on the corporate minimum required rate of return, what will be the preference for taking on the proposed cosmetics line by Edith Carolina and Michael Sanders?

	<u>Carolina</u>	<u>Sanders</u>
A.	Accept	Reject
B.	Reject	Accept
C.	Accept	Accept
D.	Reject	Reject

**[2] Gleim #: 8.4.75 -- Source: CMA 0408 2-205**

Brennan Company evaluates the company's managers using management by objectives (MBO). All of the following are considered appropriate goals for measuring a division manager's efficiency for a budgeting period **except**

- A. A targeted share of the market.
- B. A reduction in the organizational structure (fewer employees doing a given amount of work).
- C. Budgeted operating income.
- D. Earnings per share projections.

**[4] Gleim #: 8.4.77 -- Source: CMA 0408 2-270**

Oakmont Company has two divisions, Household Appliances and Construction Equipment. The manager of the Household Appliances Division is evaluated on the basis of return on investment (ROI). The manager of the Construction Equipment Division is evaluated on the basis of residual income. The cost of capital has been 12%, and the return on investment has been 16% for the two divisions. Each manager is currently considering a project with a 14% rate of return. According to the current evaluation system for managers, which manager(s) would have incentive to undertake the project?

- A. Neither manager would have incentive to undertake the project.
- B. Both managers would have incentive to undertake the project.
- C. The manager of the Construction Equipment Division would have incentive to undertake the project, while the manager of the Household Appliances Division would not have incentive to undertake the project.
- D. The manager of the Household Appliances Division would have incentive to undertake the project, while the manager of the Construction Equipment Division would not have incentive to undertake the project.

**[5] Gleim #: 8.4.68 -- Source: CMA 695 3-20**

REB Service Co. is a computer service center. For the month, REB had the following operating statistics:

Sales	\$450,000
Operating income	25,000
Net profit after taxes	8,000
Total assets	500,000
Shareholders' equity	200,000
Cost of capital	6%

Based on the above information, which one of the following statements is true? REB has a

- A. Return on investment of 4%.
- B. Residual income of \$(5,000).
- C. Residual income of \$(22,000).
- D. Return on investment of 1.6%.

**[6] Gleim #: 8.4.79 -- Source: CMA 0408 2-274**

The following selected information is from the financial statements of Bishop Corporation for the last fiscal year.

Current assets	\$ 500,000
Fixed assets	250,000
Current liabilities	100,000
Long-term debt	300,000
Stockholders' equity	350,000
Operating profit	1,000,000
Income taxes	400,000
Net income	600,000

Bishop has a cost of capital of 10%. Balance sheet amounts remained constant throughout the year. The company's residual income for last year was

- A. \$925,000
- B. \$975,000
- C. \$525,000
- D. \$575,000

**[7] Gleim #: 8.4.78 -- Source: CMA 0408 2-271**

A company is concerned that its divisional managers are not making decisions that are in the best interests of the overall corporation. In order to prevent this, the company should use a performance evaluation system that focuses on

- A. Controllable costs.
- B. Operating income.
- C. Residual income.
- D. Flexible budget variances.

**[8] Gleim #: 8.4.73 -- Source: CMA 1292 3-24**

Managerial performance can be measured in many different ways, including return on investment (ROI) and residual income. A good reason for using residual income instead of ROI is that

- A. Residual income can be computed without regard to identifying an investment base.
- B. ROI does not take into consideration both the investment turnover ratio and return-on-sales percentage.
- C. Residual income is well understood and often used in the financial press.
- D. Goal congruence is more likely to be promoted by using residual income.

**[9] Gleim #: 8.4.74 -- Source: CMA 0408 2-209**

To ensure that a divisional vice president places appropriate focus on both the short-term and the long-term objectives of the division, the best approach would be to evaluate the vice president's performance by using

- A. Financial and nonfinancial measures, including the evaluation of quality, customer satisfaction, and market performance.
- B. Return on investment (ROI), which permits easy and quick comparisons to other similar divisions.
- C. Division segment margin or profit margin.
- D. Residual income since it will eliminate the rejection of capital investments that have a return less than ROI but greater than the cost of capital.

**[10] Gleim #: 8.4.76 -- Source: CMA 0408 2-268**

For several years, Northern Division of Marino Company has maintained a positive residual income. Northern is currently considering investing in a new project that will lower the division's overall return on investment (ROI) but increase its residual income. What is the relationship between the expected rate of return on the new project, the firm's cost of capital, and the division's current ROI?

- A. The expected rate of return on the new project is higher than the division's current return on investment, but lower than the firm's cost of capital.
- B. The expected rate of return on the new project is higher than the firm's cost of capital, but lower than the division's current return on investment.
- C. The firm's cost of capital is higher than the expected rate of return on the new project, but lower than the division's current return on investment.
- D. The division's current return on investment is higher than the expected rate of return on the new project, but lower than the firm's cost of capital.

**[11] Gleim #: 8.4.72 -- Source: CMA 693 3-11**

(Refers to Fact Pattern #1)

If the Deed Corporation evaluates managerial performance using return on investment, what will be the preference for taking on the proposed cosmetics line by Edith Carolina and Michael Sanders?

	<u>Carolina</u>	<u>Sanders</u>
A.	Reject	Accept
B.	Reject	Reject
C.	Accept	Accept
D.	Accept	Reject

[12] Gleim #: 8.4.70 -- Source: CMA 697 3-24

Residual income is a better measure for performance evaluation of an investment center manager than return on investment because

- A. The arguments about the implicit cost of interest are eliminated.
- B. The problems associated with measuring the asset base are eliminated.
- C. Only the gross book value of assets needs to be calculated.
- D. Desirable investment decisions will not be neglected by high-return divisions.

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Answer Key  
(11 Questions)

- 1) C
- 2) D
- 4) C
- 5) B
- 6) A
- 7) C
- 8) D
- 9) A
- 10) B
- 11) D
- 12) D



**[1] Gleim #: 8.5.86 -- Source: CMA 0408 2-260**

Vincent Hospital has installed a new computer system. The system was designed and constructed based on the anticipated number of hours of usage required by the various hospital departments according to projections made by the departmental managers. Virtually all of the operating costs of the system are fixed. What would be the most systematic and rational manner in which to allocate the new computer system costs to the various hospital departments?

- A. By actual usage by each department.
- B. By the anticipated number of hours of usage.
- C. By the revenue generated in each department.
- D. To each department equally.

**[4] Gleim #: 8.5.87 -- Source: CMA1 0313-(38)**

Bonnert's Finance Department has purchased a new color copier system for \$10,000 that will help with required reporting. Bonnert's IT Department was planning to purchase a similar system for an additional \$10,000 but has realized that there are enough system resources from the Finance Department's purchase that both groups can share the new equipment equally. In order to fairly allocate the common cost of the equipment, the controller should use the

- A. Stand-alone cost method and allocate \$5,000 to each department.
- B. Incremental cost method and allocate \$10,000 to the Finance Department.
- C. Net realizable value method and allocate \$10,000 to the Finance Department.
- D. Constant gross profit method and allocate \$5,000 to each department.

**[5] Gleim #: 8.5.84 -- Source: CMA 0408 2-258**

Most firms allocate corporate and other support costs to divisions and departments for all of the following reasons **except** to

- A. Fix accountability and evaluate profit centers.
- B. Create competition between divisions and departments, and their managers.
- C. Remind profit-center managers that earnings must be adequate to cover some share of the indirect costs.
- D. Stimulate profit-center managers to put pressure on central managers to control service costs.

**[7] Gleim #: 8.5.85 -- Source: CMA 0408 2-259**

Which one of the following allocation approaches will ensure that the production departments do not underestimate their planned usage of service at the start of the budget period as well as make the service departments cost efficient?

- A. The use of actual rates and actual hours for both fixed and variable costs.
- B. The use of rates and quantities based on long-term historical averages for both variable and fixed costs.
- C. Budgeted rates and standard hours allowed for output attained for variable costs and budgeted rates and capacity available for fixed costs.
- D. The use of a budgeted lump-sum amount based on estimates provided by the production departments for both variable and fixed costs.

**[8] Gleim #: 8.5.88 -- Source: CMA1 0313-(39)**

Trilby's finance group purchased a new project management software package costing \$100,000. For an additional \$10,000, the tax reporting team purchased a smaller application that would have cost \$40,000 to buy separately. The controller will allocate the costs mainly to the finance group, the primary users, and should use the

- A. Method which best reflects the usage of the software package.
- B. Incremental cost allocation method, allocating \$10,000 to the tax reporting team and \$100,000 to the finance group.
- C. Dual costing method and allocate \$55,000 to both user groups.
- D. Stand-alone cost allocation method, allocating \$40,000 to the tax reporting team and \$70,000 to the finance group.

**[9] Gleim #: 8.5.80 -- Source: CMA 693 3-29**

Which one of the following firms is likely to experience dysfunctional motivation on the part of its managers due to its allocation methods?

- A. To allocate depreciation of forklifts used by workers at its central warehouse, Shahlimar Electronics uses predetermined amounts calculated on the basis of the long-term average use of the services provided.
- B. Tashkent Auto's MIS is operated out of headquarters and serves its various divisions. Tashkent's allocation of the MIS-related costs to its divisions is limited to costs the divisions will incur if they were to outsource their MIS needs.
- C. Rainier Industrial does not allow its service departments to pass on their cost overruns to the production departments.
- D. Manhattan Electronics uses the sales revenue of its various divisions to allocate costs connected with the upkeep of its headquarters building. It also uses ROI to evaluate the divisional performances.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(6 Questions)

- 1) B
- 4) A
- 5) D
- 7) C
- 8) B
- 9) D

**[3] Gleim #: 8.6.91 -- Source: CMA 694 3-30**

An appropriate transfer price between two divisions of The Stark Company can be determined from the following data:

Fabricating Division:

Market price of subassembly	\$50
Variable cost of subassembly	\$20
Excess capacity (in units)	1,000

Assembling Division:

Number of units needed	900
------------------------	-----

What is the natural bargaining range for the two divisions?

- A. Between \$20 and \$50.
- B. Any amount less than \$50.
- C. Between \$50 and \$70.
- D. \$50 is the only acceptable price.

---

**[Fact Pattern #1]**

Parkside, Inc., has several divisions that operate as decentralized profit centers. Parkside's Entertainment Division manufactures video arcade equipment using the products of two of Parkside's other divisions. The Plastics Division manufactures plastic components, one type that is made exclusively for the Entertainment Division, while other less complex components are sold to outside markets. The products of the Video Cards Division are sold in a competitive market; however, one video card model is also used by the Entertainment Division.

The actual costs per unit used by the Entertainment Division are presented below.

	<u>Plastic Components</u>	<u>Video Cards</u>
Direct material	\$1.25	\$2.40
Direct labor	2.35	3.00
Variable overhead	1.00	1.50
Fixed overhead	<u>.40</u>	<u>2.25</u>
Total cost	<u>\$5.00</u>	<u>\$9.15</u>

The Plastics Division sells its commercial products at full cost plus a 25% markup and believes the proprietary plastic component made for the Entertainment Division would sell for \$6.25 per unit on the open market. The market price of the video card used by the Entertainment Division is \$10.98 per unit.

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**[4] Gleim #: 8.6.92 -- Source: CMA 696 3-26**

(Refers to Fact Pattern #1)

A per-unit transfer price from the Video Cards Division to the Entertainment Division at full cost, \$9.15, would

- A. Encourage the Entertainment Division to purchase video cards from an outside source.
- B. Allow evaluation of both divisions on a competitive basis.
- C. Provide no profit incentive for the Video Cards Division to control or reduce costs.
- D. Satisfy the Video Cards Division's profit desire by allowing recovery of opportunity costs.

**[5] Gleim #: 8.6.93 -- Source: CMA 696 3-27**

(Refers to Fact Pattern #1)

Assume that the Entertainment Division is able to purchase a large quantity of video cards from an outside source at \$8.70 per unit. The Video Cards Division, having excess capacity, agrees to lower its transfer price to \$8.70 per unit. This action would

- A. Optimize the profit goals of the Entertainment Division while subverting the profit goals of Parkside, Inc.
- B. Allow evaluation of both divisions on the same basis.
- C. Optimize the overall profit goals of Parkside, Inc.
- D. Subvert the profit goals of the Video Cards Division while optimizing the profit goals of the Entertainment Division.

**[6] Gleim #: 8.6.94 -- Source: CMA 696 3-28**

(Refers to Fact Pattern #1)

Assume that the Plastics Division has excess capacity and it has negotiated a transfer price of \$5.60 per plastic component with the Entertainment Division. This price will

- A. Demotivate the Plastics Division causing mediocre performance.
- B. Motivate both divisions as estimated profits are shared.
- C. Cause the Plastics Division to reduce the number of commercial plastic components it manufactures.
- D. Encourage the Entertainment Division to seek an outside source for plastic components.

**[11] Gleim #: 8.6.99 -- Source: CMA 0408 2-261**

Which one of the following is an **incorrect** description of transfer pricing?

- A. If no market price exists, the transfer price may be based on cost.
- B. It measures exchanges between a company and external customers.
- C. It measures the value of goods or services furnished by a profit center to other responsibility centers within a company.
- D. If a market price exists, this price may be used as a transfer price.

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**[Fact Pattern #2]**

Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10

Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm.

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**[12] Gleim #: 8.6.100 -- Source: CMA 0408 2-266**

(Refers to Fact Pattern #2)

To optimize the overall goals of Manhattan, the minimum price to be charged for the board from the Fabrication Division to the Electronic Assembly Division should be

- A. \$46
- B. \$21
- C. \$26
- D. \$31

**[13] Gleim #: 8.6.101 -- Source: CMA 0408 2-265**

With respect to a firm's transfer pricing policy, an advantage of using a dual pricing arrangement is that it

- A. Promotes goal congruence between the supplying and buying subunits of the firm.
- B. Provides an incentive for the supplying subunit to control costs.
- C. Simplifies tax calculations when the buying and supplying subunits are taxed in different jurisdictions.
- D. Exposes the supplying subunit to the discipline of market prices.

**[14] Gleim #: 8.6.102 -- Source: CMA1 0313-(36)**

Multinational transfer prices are sometimes influenced by restrictions that some countries place on the repatriation of profits to the parent firm. Companies can minimize the effect of such restrictions by

- A. Charging less than the price that would be charged by an unrelated third party for goods transferred into divisions in these countries.
- B. Keeping prices uniform throughout all domestic and foreign units within the company.
- C. Increasing the prices of goods transferred into divisions in these countries.
- D. Decreasing the prices of goods transferred into divisions in these countries.

**[15] Gleim #: 8.6.103 -- Source: CMA1 0313-(37)**

Division A of Teltriton produces a product that can be sold to outside customers or sold to Division B for further processing. If the performance of managers is evaluated based on division profitability, what transfer pricing method will the manager of Division A request?

- A. Cost-based transfer pricing.
- B. Hybrid transfer pricing.
- C. Market-based transfer pricing.
- D. Standard transfer pricing.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(9 Questions)

- 3) A
- 4) C
- 5) C
- 6) B
- 11) B
- 12) B
- 13) A
- 14) C
- 15) C

**[2] Gleim #: 8.7.105 -- Source: CMA 692 3-14**

The most fundamental responsibility center affected by the use of market-based transfer prices is a(n)

- A. Investment center.
- B. Production center.
- C. Profit center.
- D. Cost center.

**[3] Gleim #: 8.7.106 -- Source: CMA 1296 3-17**

In theory, the optimal method for establishing a transfer price is

- A. Incremental cost.
- B. Flexible budget cost.
- C. Market price.
- D. Budgeted cost with or without a markup.

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**[Fact Pattern #1]**

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Market price	\$48
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Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm.

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**[8] Gleim #: 8.7.111 -- Source: CMA 0408 2-262**

(Refers to Fact Pattern #1)

The best process for Manhattan to determine the price ultimately charged by the Fabrication Division to the Assembly Division for the circuit board is to

- A. Establish the price by an arbitration committee.
- B. Establish the price by top management.
- C. Set the price equal to the price that would be charged if the Fabrication Department had no excess capacity.
- D. Establish the price through negotiations between the Fabrication's and Electronic Assembly's division management.



**[9] Gleim #: 8.7.112 -- Source: CMA 0408 2-267**

Kern Manufacturing has several divisions and evaluates performance using segment income. Since sales include transfers to other divisions, Kern has established a price for internal sales as cost plus 10%. Red Division has requested 10,000 units of Green Division's product. Green Division is selling its product externally at a 60% markup over cost. The corporate policy will encourage the Green Division to

- A. Reject the sale to the Red Division because it does not provide the same markup as external sales.
- B. Transfer the product to the Red Division if it does not require the Green Division to give up any external sales.
- C. Accept the sale to the Red Division if it is operating at full capacity and the sale will contribute to fixed costs.
- D. Transfer the product to the Red Division because all costs are being covered and the division will earn a 10% profit.

**[10] Gleim #: 8.7.113 -- Source: CMA 0408 2-263**

Happy Time Industries uses segment reporting for all of its decentralized divisions. It has several products that are transferred from one division to other divisions. Happy Time wants to motivate the manager of the selling division to produce efficiently. Assuming the following methods are available, the optimal transfer pricing method should be a

- A. Market-based transfer price.
- B. Cost-based transfer price that uses actual amounts.
- C. Cost-based transfer price that uses budgeted amounts.
- D. Variable cost-based transfer price that uses actual amounts.

**[11] Gleim #: 8.7.114 -- Source: CMA 0408 2-264**

Morrison's Plastics Division, a profit center, sells its products to external customers as well as to other internal profit centers. Which one of the following circumstances would justify the Plastics Division selling a product internally to another profit center at a price that is below the market-based transfer price?

- A. Routine sales commissions and collection costs would be avoided.
- B. The profit centers' managers are evaluated on the basis of unit operating income.
- C. The buying unit has excess capacity.
- D. The selling unit is operating at full capacity.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(6 Questions)

- 2) C
- 3) C
- 8) D
- 9) B
- 10) A
- 11) A

**[1] Gleim #: 9.1.22 -- Source: CMA 0205 1-27**

When management of the sales department has the opportunity to override the system of internal controls of the accounting department, a weakness exists in

- A. Monitoring.
- B. The control environment.
- C. Information and communication.
- D. Risk management.

**[5] Gleim #: 9.1.2 -- Source: CMA 1288 3-25**

The primary responsibility for establishing and maintaining internal control rests with

- A. The controller.
- B. Management.
- C. The treasurer.
- D. The external auditor.

**[13] Gleim #: 9.1.24 -- Source: CMA 1286 3-26**

Some account balances, such as those for pensions or leases, are the results of complex calculations. The susceptibility to material misstatements in these types of accounts is defined as

- A. Sampling risk.
- B. Inherent risk.
- C. Audit risk.
- D. Detection risk.

**[16] Gleim #: 9.1.32 -- Source: CMA 0408 1-107**

Which one of the following options would be most effective in deterring the commission of fraud?

- A. Policies of strong internal control, segregation of duties, and requiring employees to take vacations.
- B. Employee training, segregation of duties, and punishment for unethical behavior.
- C. Policies of strong internal control and punishments for unethical behavior.
- D. Hiring ethical employees, employee training, and segregation of duties.

**[27] Gleim #: 9.1.31 -- Source: CMA 0408 1-102**

The basic concepts implicit in internal accounting controls include the following:

- The cost of the system should not exceed benefits expected to be attained.
- The overall impact of the control procedure should not hinder operating efficiency.

Which one of the following internal accounting controls recognizes these two factors?

- A. Reasonable assurance.
- B. Management responsibility.
- C. Methods of data processing.
- D. Limitations.

**[28] Gleim #: 9.1.21 -- Source: CMA 0205 1-27**

Risk assessment is a process

- A. Designed to identify potential events that may affect the entity.
- B. That assesses the quality of internal control throughout the year.
- C. That establishes policies and procedures to accomplish internal control objectives.
- D. Of identifying and capturing information in a timely fashion.

**[29] Gleim #: 9.1.30 -- Source: CMA 1294 2-30**

There are three components of audit risk: inherent risk, control risk, and detection risk. Inherent risk is

- A. The risk that a material misstatement that could occur in an assertion will not be prevented or detected on a timely basis by the entity's internal control structure policies or procedures.
- B. The susceptibility of an assertion to a material misstatement, assuming that there are no related internal control structure policies or procedures.
- C. The risk that the auditor will not detect a material misstatement that exists in an assertion.
- D. The risk that the auditor may unknowingly fail to appropriately modify his or her opinion on financial statements that are materially misstated.

**[32] Gleim #: 9.1.1 -- Source: CMA 685 3-17**

One of the financial statement auditor's major concerns is to ascertain whether internal control is designed to provide reasonable assurance that

- A. Financial reporting is reliable.
- B. Corporate morale problems are addressed immediately and effectively.
- C. The chief accounting officer reviews all accounting transactions.
- D. Profit margins are maximized, and operational efficiency is optimized.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(8 Questions)

- 1) B
- 5) B
- 13) B
- 16) A
- 27) A
- 28) A
- 29) B
- 32) A

**[2] Gleim #: 9.2.34 -- Source: CMA 1283 3-14**

A proper segregation of duties requires that an individual

- A. Authorizing a transaction records it.
- B. Recording a transaction not compare the accounting record of the asset with the asset itself.
- C. Authorizing a transaction maintain custody of the asset that resulted from the transaction.
- D. Maintaining custody of an asset be entitled to access the accounting records for the asset.

**[5] Gleim #: 9.2.37 -- Source: CMA 1281 3-19**

When considering internal control over securities, the auditor is especially concerned about

- A. Preparation of accrual adjustments on bonds by the corporate controller.
- B. Access to stock certificates by the corporate controller.
- C. Approval of temporary stock investment purchases by the corporate treasurer or company president.
- D. Access to stock certificates by the corporate treasurer.

**[8] Gleim #: 9.2.40 -- Source: CMA 686 3-20**

The procedure that would best discourage the resubmission of vendor invoices after they have been paid is

- A. The cancellation of vouchers by accounting personnel.
- B. The cancellation of vouchers by treasurer personnel.
- C. The mailing of payments directly to payees by accounting personnel.
- D. A requirement for double endorsement of checks.

**[9] Gleim #: 9.2.41 -- Source: CMA 690 5-8**

Organizational independence in the processing of payroll is achieved by functional separations that are built into the system. Which one of the following functional separations is **not** required for internal control purposes?

- A. Separation of payroll preparation and maintenance of year-to-date records.
- B. Separation of timekeeping from payroll preparation.
- C. Separation of payroll preparation and paycheck distribution.
- D. Separation of personnel function from payroll preparation.

**[12] Gleim #: 9.2.44 -- Source: CMA 1288 3-22**

Internal control should follow certain basic principles to achieve its objectives. One of these principles is the segregation of functions. Which one of the following examples does **not** violate the principle of segregation of functions?

- A. The department time clerk is given the undistributed payroll checks to mail to absent employees.
- B. The sales manager has the responsibility to approve credit and the authority to write off accounts.
- C. The treasurer has the authority to sign checks but gives the signature block to the assistant treasurer to run the check-signing machine.
- D. The warehouse clerk, who has the custodial responsibility over inventory in the ware house, may authorize disposal of damaged goods.

**[13] Gleim #: 9.2.45 -- Source: CMA 1288 3-23**

If internal control is well designed, two tasks that should be performed by different persons are

- A. Posting of amounts from both the cash receipts journal and cash payments journal to the general ledger.
- B. Recording of cash receipts and preparation of bank reconciliations.
- C. Approval of bad debt write-offs, and reconciliation of the accounts payable subsidiary ledger and controlling account.
- D. Distribution of payroll checks and approval of sales returns for credit.

**[14] Gleim #: 9.2.46 -- Source: CMA 689 3-16**

Which one of the following situations represents an internal control weakness in the payroll department?

- A. Paychecks are distributed by the employees' immediate supervisor.
- B. Payroll department personnel are rotated in their duties.
- C. The timekeeping function is independent of the payroll department.
- D. Payroll records are reconciled with quarterly tax reports.

**[16] Gleim #: 9.2.48 -- Source: CMA 689 3-17**

Which one of the following situations represents a strength of internal control for purchasing and accounts payable?

- A. Vendors' invoices are matched against purchase orders and receiving reports before a liability is recorded.
- B. Unmatched receiving reports are reviewed on an annual basis.
- C. Prenumbered receiving reports are issued randomly.
- D. Invoices are approved for payment by the purchasing department.

**[20] Gleim #: 9.2.52 -- Source: CMA 690 3-25**

Auditors document their understanding of internal control with questionnaires, flowcharts, and narrative descriptions. A questionnaire consists of a series of questions concerning controls that auditors consider necessary to prevent or detect errors and fraud. The most appropriate question designed to contribute to the auditors' understanding of the completeness of the expenditure (purchases-payables) cycle concerns the

- A. Qualifications of accounting personnel.
- B. Use and accountability of prenumbered checks.
- C. Internal verification of quantities, prices, and mathematical accuracy of sales invoices.
- D. Disposition of cash receipts.

**[24] Gleim #: 9.2.56 -- Source: CMA 1283 3-11**

When an organization has strong internal control, management can expect various benefits. The benefit **least** likely to occur is

- A. Reduced cost of an external audit.
- B. Availability of reliable data for decision-making purposes.
- C. Elimination of employee fraud.
- D. Some assurance of compliance with the Foreign Corrupt Practices Act of 1977.

**[27] Gleim #: 9.2.59 -- Source: CMA 686 3-14**

Which one of the following would **not** be considered an internal control structure policy or procedure relevant to a financial statement audit?

- A. Timely reporting and review of quality control results.
- B. Periodic reconciliation of perpetual inventory records to the general ledger control account.
- C. Maintenance of control over unused checks.
- D. Comparison of physical inventory counts to perpetual inventory records.

**[43] Gleim #: 9.2.75 -- Source: CMA 689 3-15**

Which one of the following situations represents an internal control weakness in accounts receivable?

- A. Customers' statements are mailed monthly by the accounts receivable department.
- B. The cashier is denied access to customers' records and monthly statements.
- C. Delinquent accounts are reviewed only by the sales manager.
- D. Internal auditors confirm customer accounts periodically.

**[44] Gleim #: 9.2.76 -- Source: CMA 690 3-26**

Control risk is the risk that a material misstatement in an account will not be prevented or detected on a timely basis by the client's internal control structure policies or procedures. The best control procedure to prevent or detect fictitious payroll transactions is

- A. To use and account for prenumbered payroll checks.
- B. Internal verification of authorized pay rates, computations, and agreement with the payroll register.
- C. Periodic independent bank reconciliations of the payroll bank account.
- D. Personnel department authorization for hiring, pay rate, job status, and termination.

**[45] Gleim #: 9.2.77 -- Source: CMA 1286 3-29**

One characteristic of an effective internal control structure is the proper segregation of duties. The combination of responsibilities that would **not** be considered a violation of segregation of functional responsibilities is

- A. Timekeeping and preparation of payroll journal entries.
- B. Signing of paychecks and custody of blank payroll checks.
- C. Preparation of paychecks and check distribution.
- D. Approval of time cards and preparation of paychecks.

**[46] Gleim #: 9.2.78 -- Source: CMA 1288 3-21**

According to SAS 55 (AU 319), *Consideration of the Internal Control in a Financial Statement Audit*, an entity's internal control structure (ICS) consists of the policies and procedures established to provide reasonable assurance that specific entity objectives will be achieved. Only some of these objectives, policies, and procedures are relevant to a financial statement audit. Which one of the following would most likely be considered in such an audit?

- A. Timely reporting and review of quality control results.
- B. Maintenance of control over unused checks.
- C. Maintenance of statistical production analyses.
- D. Marketing analysis of sales generated by advertising projects.



**[52] Gleim #: 9.2.84 -- Source: CMA 1287 5-15**

In an automated payroll processing environment, a department manager substituted the time card for a terminated employee with a time card for a fictitious employee. The fictitious employee had the same pay rate and hours worked as the terminated employee. The best control technique to detect this action using employee identification numbers would be a

- A. Hash total.
- B. Record count.
- C. Batch total.
- D. Subsequent check.

**[53] Gleim #: 9.2.85 -- Source: CMA 1289 5-2**

Payroll systems should have elaborate controls to prevent, detect, and correct errors and unauthorized tampering. The best set of controls for a payroll system includes

- A. Sign tests, limit tests, passwords and user codes, online edit checks, and payments by check.
- B. Passwords and user codes, batch totals, employee supervision, and record counts of each run.
- C. Batch and hash totals, record counts of each run, proper separation of duties, special control over unclaimed checks, and backup copies of activity and master files.
- D. Employee supervision, batch totals, record counts of each run, and payments by check.

**[54] Gleim #: 9.2.86 -- Source: CMA 693 4-4**

Accounting controls are concerned with the safeguarding of assets and the reliability of financial records. Consequently, these controls are designed to provide reasonable assurance that all of the following take place **except**

- A. Compliance with methods and procedures ensuring operational efficiency and adherence to managerial policies.
- B. Executing transactions in accordance with management's general or specific authorization.
- C. Permitting access to assets in accordance with management's authorization.
- D. Comparing recorded assets with existing assets at periodic intervals and taking appropriate action with respect to differences.

**[55] Gleim #: 9.2.87 -- Source: CMA 1287 5-17**

The reporting of accounting information plays a central role in the regulation of business operations. The importance of sound internal control practices is underscored by the Foreign Corrupt Practices Act of 1977 which requires publicly owned U.S. corporations to maintain systems of internal control that meet certain minimum standards. Preventive controls are an integral part of virtually all accounting processing systems, and much of the information generated by the accounting system is used for preventive control purposes. Which one of the following is **not** an essential element of a sound preventive control system?

- A. Documentation of policies and procedures.
- B. Sound personnel practices.
- C. Implementation of state-of-the-art software and hardware.
- D. Separation of responsibilities for the recording, custodial, and authorization functions.

**[56] Gleim #: 9.2.88 -- Source: CMA 690 5-7**

The document that is used to record the actual work performed for a specific product by each factory employee is called a(n)

- A. Job time ticket.
- B. Production order cost summary.
- C. Payroll register.
- D. Operations list.

**[57] Gleim #: 9.2.89 -- Source: CMA 690 5-9**

If employee paychecks are distributed by hand to employees, which one of the following departments should be responsible for the safekeeping of unclaimed paychecks?

- A. Production Department in which the employee works or worked.
- B. Payroll Department.
- C. Timekeeping Department.
- D. Cashier Department.

**[58] Gleim #: 9.2.90 -- Source: CMA 690 5-10**

Organizational independence is required in the processing of customers' orders in order to maintain an internal control structure. Which one of the following situations is **not** a proper separation of duties in the processing of orders from customers?

- A. Shipping of goods by the Shipping Department that have been retrieved from stock by the Finished Goods Storeroom Department.
- B. Approval by Credit Department of a sales order prepared by the Sales Department.
- C. Approval of a sales credit memo because of a product return by the Sales Department with subsequent posting to the customer's account by the Accounts Receivable Department.
- D. Invoice preparation by the Billing Department and posting to customers' accounts by the Accounts Receivable Department.

**[59] Gleim #: 9.2.91 -- Source: CMA 690 5-11**

A bill of lading is a document that

- A. Is used to transfer responsibility for goods between the seller of goods and a common carrier.
- B. Indicates the amount the customer owes by listing the quantities shipped, unit price, and total price of goods shipped.
- C. Reduces a customer's account for goods returned to the seller.
- D. Is sent with the goods giving a listing of the quantities of items included in the shipment.

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**[Fact Pattern #1]**

(Refer to Figure FIGURE01\_05\_02\_Q.)

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**[60] Gleim #: 9.2.92 -- Source: CMA 690 5-1**

(Refers to Fact Pattern #1)

The initiation of the purchase of materials and supplies would be the responsibility of the

- A. Stores Control Department.
- B. Inventory Control Department.
- C. Production Department.
- D. Purchasing Department.

**[61] Gleim #: 9.2.93 -- Source: CMA 690 5-3**

(Refers to Fact Pattern #1)

Multiple copies of the purchase order are prepared for recordkeeping and distribution with a copy of the purchase order sent to the vendor and one retained by the Purchasing Department. In addition, for proper informational flow and internal control purposes, a version of the purchase order would be distributed to the

- A. Accounts Payable, Receiving, and Production Planning Departments.
- B. Accounts Payable, Accounts Receivable, and Receiving Departments.
- C. Accounts Payable, Receiving, and Stores Control Departments.
- D. Accounts Payable, Receiving, and Inventory Control Departments.

**[62] Gleim #: 9.2.94 -- Source: CMA 690 5-4**

(Refers to Fact Pattern #1)

Responsibility for following up on any problems regarding orders of production materials and supplies, such as orders for which no acknowledgment has been received, orders overdue, partial orders, damaged or substandard merchandise received on an order, etc., would be entrusted to the

- A. Inventory Control Department.
- B. Stores Control Department.
- C. Production Planning Department.
- D. Purchasing Department.

**[63] Gleim #: 9.2.95 -- Source: CMA 690 5-5**

(Refers to Fact Pattern #1)

The documents that the Accounts Payable Department must review before it can properly authorize payment for the purchase of materials and supplies are

- A. Vendor's invoice, acknowledgment purchase order, and receiving report.
- B. Vendor's invoice, purchase order, and receiving report.
- C. Vendor's monthly statement, purchase order, and voucher.
- D. Vendor's invoice, purchase requisition, and acknowledgment purchase order.

**[64] Gleim #: 9.2.96 -- Source: CMA 690 5-6**

The document that is the authorization to initiate the manufacture of goods is referred to as a

- A. Raw materials requisition.
- B. Daily production schedule.
- C. Production order.
- D. Bill of materials.

**[78] Gleim #: 9.2.110 -- Source: CMA 0205 1-29**

Segregation of duties is a fundamental concept in an effective system of internal control. Nevertheless, the internal auditor must be aware that this safeguard can be compromised through

- A. Irregular employee reviews.
- B. Collusion among employees.
- C. Lack of training of employees.
- D. Absence of internal auditing.

**[79] Gleim #: 9.2.111 -- Source: CMA 1283 3-15**

For an internal audit department to be considered as a relevant internal control by the external auditor, the internal auditor must

- A. Use statistical sampling procedures.
- B. Be cost effective.
- C. Perform operational audits.
- D. Be independent of the accounting function.

**[80] Gleim #: 9.2.112 -- Source: CMA 690 3-27**

One of the steps in assessing control risk in a computerized information control system is identifying necessary controls to prevent data from being lost, added, duplicated, or altered during processing. An example of this type of control is the

- A. Use of external and internal file labels.
- B. Review of data output by data control groups.
- C. Authorization and approval of data in user departments and screening of data by data control groups.
- D. Use of control totals, limit and reasonableness checks, and sequence tests.

**[81] Gleim #: 9.2.113 -- Source: CMA 1288 3-26**

In a well-designed internal control structure in which the cashier receives remittances from the mail room, the cashier should **not**

- A. Post the receipts to the accounts receivable subsidiary ledger cards.
- B. Deposit remittances daily at a local bank.
- C. Endorse the checks.
- D. Prepare the bank deposit slip.

**[82] Gleim #: 9.2.114 -- Source: CMA 1289 5-1**

To control purchasing and accounts payable, an information system must include certain source documents. For a manufacturing organization, these documents should include

- A. Purchase requisitions, purchase orders, inventory reports of goods needed, and vendor invoices.
- B. Purchase orders, receiving reports, and vendor invoices.
- C. Purchase requisitions, purchase orders, receiving reports, and vendor invoices.
- D. Receiving reports and vendor invoices.

**[83] Gleim #: 9.2.115 -- Source: CMA 0408 1-103**

Which one of the following functions performed in an organization is a violation of sound principles of internal control?

- A. The General Ledger Department compares the summary journal entry, received from the cashier for cash receipts applicable to outstanding accounts, with the batch total for the posting to the Subsidiary Ledger by the Accounts Receivable Department.
- B. A mail clerk opening the mail compares the check received with the source document accompanying the payment, either confirming or noting the amount paid, then forwards the source documents that accompany the payments (along with a listing of the cash receipts) to Accounts Receivable, on a daily basis, for posting to the Subsidiary Ledger.
- C. At the end of the week, the cashier prepares a deposit slip for all of the cash receipts received during the week.
- D. A mail clerk opening the mail compares the check received with the source document accompanying the payment, either confirming or noting the amount paid, then forwards the checks daily (along with a listing of the cash receipts) to the cashier for deposit.

**[84] Gleim #: 9.2.116 -- Source: CMA 0408 1-105**

Which one of the following methods for the distribution of employees' pay would provide the best internal control for the organization?

- A. Delivery of paychecks directly to each employee by a representative of the Human Resource Department.
- B. Delivery of paychecks directly to each employee by the payroll manager.
- C. Delivery of paychecks to each department supervisor, who in turn would distribute paychecks directly to the employees in his/her department.
- D. Direct deposit in each employee's personal bank account.

**[85] Gleim #: 9.2.117 -- Source: CMA1 0313-(67)**

The new controller of a company is evaluating her department for proper segregation of duties. Evaluate the following statements and determine which set of duties is acceptable to be performed by the same employee while still maintaining proper segregation of duties.

- A. Enter expenses into the general ledger and pay the credit card bills.
- B. Authorize cash disbursements and deliver the payments.
- C. Collect the cash and checks and take the deposit to the bank.
- D. Receive the company's deposits and record the transaction.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(36 Questions)

- 2) B
- 5) B
- 8) B
- 9) A
- 12) C
- 13) B
- 14) A
- 16) A
- 20) B
- 24) C
- 27) A
- 43) C
- 44) D
- 45) A
- 46) B
- 52) A
- 53) C
- 54) A
- 55) C
- 56) A
- 57) D
- 58) C
- 59) A
- 60) B
- 61) D
- 62) D
- 63) B
- 64) C
- 78) B
- 79) D
- 80) D
- 81) A
- 82) C
- 83) C
- 84) D
- 85) C

**[2] Gleim #: 9.3.123 -- Source: CMA 1280 3-26**

A major impact of the Foreign Corrupt Practices Act of 1977 is that registrants subject to the Securities Exchange Act of 1934 are now required to

- A. Keep records that reflect the transactions and dispositions of assets and to maintain a system of internal accounting controls.
- B. Prepare financial statements in accord with international accounting standards.
- C. Produce full, fair, and accurate periodic reports on foreign commerce and/or foreign political party affiliations.
- D. Provide access to records by authorized agencies of the federal government.

**[10] Gleim #: 9.3.121 -- Source: CMA 1285 3-30**

The requirement of the Foreign Corrupt Practices Act of 1977 to devise and maintain adequate internal control is assigned in the Act to the

- A. Board of directors.
- B. Director of internal auditing.
- C. Chief financial officer.
- D. Company as a whole with no designation of specific persons or positions.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(2 Questions)

- 2) A
- 10) D



**[1] Gleim #: 10.1.1 -- Source: CMA 682 3-17**

From a modern internal auditing perspective, which one of the following statements represents the most important benefit of an internal auditing activity to management?

- A. Assurance that there is reasonable control over day-to-day operations.
- B. Assurance that the organization is complying with legal requirements.
- C. Assurance that fraudulent activities will be detected.
- D. Assurance that published financial statements are correct.

**[12] Gleim #: 10.1.12 -- Source: CMA 0205 1-30**

Of the following, the primary objective of compliance testing is to determine whether

- A. Collusion is taking place.
- B. Financial statement line items are properly stated.
- C. Procedures are regularly updated.
- D. Controls are functioning as planned.

**[13] Gleim #: 10.1.13 -- Source: CMA 1284 3-22**

Which of the following is most likely to be regarded as a strength in internal control in a traditional external audit?

- A. The routine supervisory review of production planning.
- B. The performance of financial audits by the internal audit activity.
- C. The existence of a preventive maintenance program.
- D. The performance of operational engagements by internal auditors.

**[57] Gleim #: 10.1.57 -- Source: CMA 0205 1-34**

Which one of the following forms of audit is most likely to involve a review of an entity's performance of specific activities in comparison to organizational-specific objectives?

- A. Compliance audit.
- B. Financial audit.
- C. Information system audit.
- D. Operational audit.

**[58] Gleim #: 10.1.58 -- Source: CMA 0408 1-115**

If a corporation may be violating federal and state laws governing environmental concerns, which one of the following types of audit will best assist in ascertaining whether such situations may exist?

- A. Financial audit.
- B. Compliance audit.
- C. Management audit.
- D. Operational audit.

**[59] Gleim #: 10.1.59 -- Source: CMA 0408 1-116**

Which one of the following types of audits would be most likely to focus on objectives related to the economic and efficient use of resources?

- A. Independent audit.
- B. Compliance audit.
- C. Operational audit.
- D. Information systems audit.

**[60] Gleim #: 10.1.60 -- Source: CMA 0408 1-117**

When an auditor expresses an opinion as to the efficiency and effectiveness of an entity's activities and makes recommendations for improvements, the auditor is conducting a(n)

- A. Financial statement audit of a public company.
- B. Compliance audit.
- C. Operational audit.
- D. Financial statement audit of a municipality.

**[61] Gleim #: 10.1.61 -- Source: CMA 0408 1-111**

In the practice of internal auditing, the auditors must consider the following responsibilities:

- Be alert to the possibility of intentional wrongdoing, errors and omissions, inefficiency, waste, ineffectiveness, and conflict of interest.
- Conduct examinations and verifications to a reasonable extent.
- Recommend whatever investigation is considered necessary in the circumstances and follow up to see that responsibilities have been met.

Which one of the following specific *Standards for the Professional Practice of Internal Auditing* most directly covers these responsibilities?

- A. Due professional care.
- B. Objectivity.
- C. Reliability and integrity of information.
- D. Policies and procedures.

**[62] Gleim #: 10.1.62 -- Source: CMA 0408 1-112**

In the practice of internal auditing, auditors should identify conditions such as

- Underutilized facilities,
- Procedures which are not cost justified, and
- Overstaffing and understaffing.

Which one of the following *Standards for the Professional Practice of Internal Auditing* most directly covers these activities?

- A. Due professional care.
- B. Performance of audit work.
- C. Quality assurance.
- D. Scope of work.

**[63] Gleim #: 10.1.63 -- Source: CMA 0408 1-100**

An external auditor's primary consideration when assessing a company's internal control structure policies and procedures is whether they

- A. Reflect management's philosophy and operating style.
- B. Affect the financial statement assertions.
- C. Relate to the control environment.
- D. Prevent management override.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(10 Questions)

- 1) A
- 12) D
- 13) B
- 57) D
- 58) B
- 59) C
- 60) C
- 61) A
- 62) D
- 63) B

**[2] Gleim #: 10.2.65 -- Source: CMA 693 4-6**

Data processed by a computer system are usually transferred to some form of output medium for storage. However, the presence of computerized output does not, in and of itself, ensure the output's accuracy, completeness, or authenticity. For this assurance, various controls are needed. The major types of controls for this area include

- A. Transaction controls, general controls, and printout controls.
- B. Activity listings, echo checks, and pre-numbered forms.
- C. Tape and disk output controls and printed output controls.
- D. Input controls, tape and disk output controls, and printed output controls.

**[3] Gleim #: 10.2.66 -- Source: CMA 695 4-22**

In the organization of the information systems function, the most important separation of duties is

- A. Using different programming personnel to maintain utility programs from those who maintain the application programs.
- B. Not allowing the data librarian to assist in data processing operations.
- C. Assuring that those responsible for programming the system do not have access to data processing operations.
- D. Having a separate information officer at the top level of the organization outside of the accounting function.

**[5] Gleim #: 10.2.68 -- Source: CMA 695 4-23**

Data input validation routines include

- A. Passwords.
- B. Terminal logs.
- C. Backup controls.
- D. Hash totals.

**[6] Gleim #: 10.2.69 -- Source: CMA 0205 4-10**

An accounting system identification code that uses a sum-of-digits check digit will detect all of the following errors **except**

- A. Transcription errors.
- B. Completeness errors.
- C. Validity errors.
- D. Transposition errors.

**[7] Gleim #: 10.2.70 -- Source: CMA 1296 4-29**

In order to prevent, detect, and correct errors and unauthorized tampering, a payroll system should have adequate controls. The best set of controls for a payroll system includes

- A. Passwords and user codes, batch totals, employee supervision, and record counts of each run.
- B. Batch and hash totals, record counts of each run, proper separation of duties, passwords and user codes, and backup copies of activity and master files.
- C. Employee supervision, batch totals, record counts of each run, and payments by check.
- D. Batch totals, record counts, user codes, proper separation of duties, and online edit checks.

**[8] Gleim #: 10.2.71 -- Source: CMA 1287 5-16**

An employee in the receiving department keyed in a shipment from a remote terminal and inadvertently omitted the purchase order number. The best systems control to detect this error would be

- A. Completeness test.
- B. Sequence check.
- C. Batch total.
- D. Reasonableness test.

**[9] Gleim #: 10.2.72 -- Source: CMA 0205 4-11**

Which one of the following statements concerning concurrent auditing techniques is **false**?

- A. They allow monitoring a system on a continuous basis for fraudulent transactions.
- B. They are most useful in complex online systems in which audit trails have either become diminished or are very limited.
- C. They allow faster detection of unauthorized transactions.
- D. They are standard components of generic software packages.

**[10] Gleim #: 10.2.73 -- Source: CMA 695 4-30**

In auditing computer-based systems, the integrated test facility (ITF)

- A. Is a set of specialized software routines that are designed to perform specialized audit tests and store audit evidence.
- B. Uses an audit log to record transactions and data having special audit significance during regular processing runs.
- C. Allows the auditor to assemble test transactions and run them through the computer system to test the integrity of controls on a sample data base.
- D. Is a concurrent audit technique that establishes a special set of dummy master files and enters transactions to test the programs using the dummy files during regular processing runs.

**[12] Gleim #: 10.2.75 -- Source: CMA 1290 4-22**

The most critical aspect of separation of duties within information systems is between

- A. Programmers and systems analysts.
- B. Project leaders and programmers.
- C. Management and users.
- D. Programmers and computer operators.

**[14] Gleim #: 10.2.77 -- Source: CMA 687 5-4**

Which one of the following input validation routines is **not** likely to be appropriate in a real-time operation?

- A. Reasonableness check.
- B. Sign check.
- C. Redundant data check.
- D. Sequence check.

**[15] Gleim #: 10.2.78 -- Source: CMA 687 5-5**

The online data entry control called preformatting is

- A. A series of requests for required input data that requires an acceptable response to each request before a subsequent request is made.
- B. A program initiated prior to regular input to discover errors in data before entry so that the errors can be corrected.
- C. The display of a document with blanks for data items to be entered by the terminal operator.
- D. A check to determine if all data items for a transaction have been entered by the terminal operator.

**[16] Gleim #: 10.2.79 -- Source: CMA 1290 4-21**

Which one of the following represents a lack of internal control in a computer-based system?

- A. Provisions exist to ensure the accuracy and integrity of computer processing of all files and reports.
- B. Programmers have access to change programs and data files when an error is detected.
- C. Any and all changes in applications programs have the authorization and approval of management.
- D. Provisions exist to protect data files from unauthorized access, modification, or destruction.

**[17] Gleim #: 10.2.80 -- Source: CMA 691 4-25**

Edit checks in a computerized accounting system

- A. Are preventive controls.
- B. Should be performed on transactions prior to updating a master file.
- C. Must be installed for the system to be operational.
- D. Should be performed immediately prior to output distribution.

**[18] Gleim #: 10.2.81 -- Source: CMA 1284 5-28**

The use of a generalized audit software package

- A. Relieves an auditor of the typical tasks of investigating exceptions, verifying sources of information, and evaluating reports.
- B. Overcomes the need for an auditor to learn much about computers.
- C. Is a major aid in retrieving information from computerized files.
- D. Is a form of auditing around the computer.

**[19] Gleim #: 10.2.82 -- Source: CMA 685 5-25**

Which one of the following is the best reason for developing a computer security plan?

- A. Recovery from the damage associated with any identified threats can be assured.
- B. All possible threats associated with the data processing equipment are identified.
- C. A company can select the set of control policies and procedures that optimize computer security relative to cost.
- D. The user departments can be assured that control policies are in place and their data files are secure.

**[20] Gleim #: 10.2.83 -- Source: CMA 685 5-27**

An online data entry technique that can be employed when inexperienced personnel enter data is the use of

- A. Prompting.
- B. Checkpoints.
- C. Overflow procedures.
- D. Compatibility tests.

**[21] Gleim #: 10.2.84 -- Source: CMA 685 5-28**

Routines that use the computer to check the validity and accuracy of transaction data during input are called

- A. Integrated test facilities.
- B. Compiler programs.
- C. Edit programs.
- D. Operating systems.

**[22] Gleim #: 10.2.85 -- Source: CMA 686 5-13**

An example of an internal check is

- A. Collecting accurate statistics of historical transactions while gathering data.
- B. Making sure that output is distributed to the proper people.
- C. Monitoring the work of programmers.
- D. Recalculating an amount to ensure its accuracy.

**[23] Gleim #: 10.2.86 -- Source: CMA 686 5-12**

A control designed to catch errors at the point of data entry is

- A. A record count.
- B. A self-checking digit.
- C. Checkpoints.
- D. A batch total.

**[24] Gleim #: 10.2.87 -- Source: CMA 686 5-14**

Program documentation is a control designed primarily to ensure that

- A. Programs are kept up to date and perform as intended.
- B. Data have been entered and processed.
- C. Programs do not make mathematical errors.
- D. Programmers have access to the tape library or information on disk files.



**[25] Gleim #: 10.2.88 -- Source: CMA 687 5-7**

Compatibility tests are sometimes employed to determine whether an acceptable user is allowed to proceed. In order to perform compatibility tests, the system must maintain an access control matrix. The one item that is **not** part of an access control matrix is a

- A. Limit on the number of transaction inquiries that can be made by each user in a specified time period.
- B. List of all files maintained on the system.
- C. List of all authorized user code numbers and passwords.
- D. List of all programs maintained on the system.

**[26] Gleim #: 10.2.89 -- Source: CMA 687 5-3**

Whether or not a real-time program contains adequate controls is most effectively determined by the use of

- A. A tracing routine.
- B. Audit software.
- C. An integrated test facility.
- D. A tagging routine.

**[27] Gleim #: 10.2.90 -- Source: CMA 1294 4-15**

The most critical aspect of the separation of duties within a mainframe information systems environment is between

- A. Programmers and computer operators.
- B. Programmers and project leaders.
- C. Programmers and users.
- D. Programmers and systems analysts.

**[28] Gleim #: 10.2.91 -- Source: CMA 685 5-24**

Control procedures over accounting information systems are referred to as general controls or application controls. The primary objective of application controls in a computer environment is to

- A. Ensure the separation of incompatible functions in the data processing departments.
- B. Maintain the accuracy of the inputs, files, and outputs for specific applications.
- C. Provide controls over the electronic functioning of the hardware.
- D. Plan for the protection of the facilities and backup for the systems.

**[29] Gleim #: 10.2.92 -- Source: CMA 685 5-26**

A company employing an online computer system has terminals located in all operating departments for inquiry and updating purposes. Many of the company's employees have access to and are required to use the terminals. A control the company would incorporate to prevent an employee from making an unauthorized change to computer records unrelated to that employee's job would be to

- A. Restrict the physical access to terminals.
- B. Establish user codes and passwords.
- C. Apply a compatibility test to transactions or inquiries entered by the user.
- D. Use validity checks.

**[30] Gleim #: 10.2.93 -- Source: CMA 0205 1-33**

In entering the billing address for a new client in Emil Company's computerized database, a clerk erroneously entered a nonexistent zip code. As a result, the first month's bill mailed to the new client was returned to Emil Company. Which one of the following would most likely have led to discovery of the error at the time of entry into Emil Company's computerized database?

- A. Validity test.
- B. Parity test.
- C. Record count test.
- D. Limit test.

**[31] Gleim #: 10.2.94 -- Source: CMA 687 5-9**

Turnaround documents

- A. Are generated by the computer and eventually return to it.
- B. Generally circulate only within the computer center.
- C. Are largely restricted to use in a manual system.
- D. Are only used internally in an organization.

**[32] Gleim #: 10.2.95 -- Source: CMA 1289 5-10**

Some of the more important controls that relate to automated accounting information systems are validity checks, limit checks, field checks, and sign tests. These are classified as

- A. Input validation routines.
- B. Data access validation routines.
- C. Hash totaling.
- D. Control total validation routines.

**[33] Gleim #: 10.2.96 -- Source: CMA 1284 5-27**

An advantage of having a computer maintain an automated error log in conjunction with computer edit programs is that

- A. Less manual work is required to determine how to correct errors.
- B. Better editing techniques will result.
- C. Reports can be developed that summarize the errors by type, cause, and person responsible.
- D. The audit trail is maintained.

**[35] Gleim #: 10.2.98 -- Source: CMA 0408 1-118**

A computer virus is different from a "Trojan horse" because the virus can

- A. Erase executable files.
- B. Corrupt data.
- C. Replicate itself.
- D. Alter programming instructions.

**[36] Gleim #: 10.2.99 -- Source: CMA 0408 1-120**

In securing the client/server environment of an information system, a principal disadvantage of using a single level sign-on password is the danger of creating a(n)

- A. Single point of failure.
- B. Administrative bottleneck.
- C. Lock-out of valid users.
- D. Trap door entry point.

**[37] Gleim #: 10.2.100 -- Source: CMA 0408 1-131**

An internal information systems control questionnaire that includes computer input controls, the distribution of output media, and record-retention procedures is designed to review and assess which one of the following?

- A. Organization of duties.
- B. Facility security.
- C. Computer systems.
- D. Computer operations.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(32 Questions)

- 2) D
- 3) C
- 5) D
- 6) D
- 7) B
- 8) A
- 9) D
- 10) D
- 12) D
- 14) D
- 15) C
- 16) B
- 17) B
- 18) C
- 19) C
- 20) A
- 21) C
- 22) D
- 23) B
- 24) A
- 25) A
- 26) C
- 27) A
- 28) B
- 29) C
- 30) A
- 31) A
- 32) A
- 33) C
- 35) C
- 36) A
- 37) D

**[19] Gleim #: 10.3.119 -- Source: CMA 689 5-2**

The graphic portrayal of the flow of data and the information processing of a system, including computer hardware, is best displayed in a

- A. System flowchart.
- B. Gantt chart.
- C. Data-flow diagram.
- D. Program flowchart.

**[21] Gleim #: 10.3.121 -- Source: CMA 696 4-14**

A critical aspect of a disaster recovery plan is to be able to regain operational capability as soon as possible. In order to accomplish this, an organization can have an arrangement with its computer hardware vendor to have a fully operational facility available that is configured to the user's specific needs. This is best known as a(n)

- A. Cold site.
- B. Hot site.
- C. Parallel system.
- D. Uninterruptible power system.

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**[Fact Pattern #1]**

This flowchart depicts the processing of daily cash receipts for Rockmart Manufacturing. Please note that some procedures are not shown in this flowchart.

(Refer to Figure FIGURE5\_18.)

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**[22] Gleim #: 10.3.122 -- Source: CMA 1287 5-7**

(Refers to Fact Pattern #1)

The customer checks accompanied by the control tape (refer to symbol A) are

- A. Taken by the mail clerk to the bank for deposit daily.
- B. Accumulated for a week and then forwarded to the treasurer for deposit weekly.
- C. Forwarded daily to the billing department for deposit.
- D. Forwarded to the treasurer for deposit daily.

**[23] Gleim #: 10.3.123 -- Source: CMA 1287 5-8**

(Refers to Fact Pattern #1)

What is the appropriate description that should be placed in symbol B?

- A. Collation of remittance advices.
- B. Error correction.
- C. Keying and verifying.
- D. Batch processing.

**[24] Gleim #: 10.3.124 -- Source: CMA 1287 5-9**

(Refers to Fact Pattern #1)

The next action regarding the customer remittance advices (refer to symbol C) is to

- A. File them daily by batch number.
- B. Forward them to the internal audit department for internal review.
- C. Discard them immediately.
- D. Forward them to the treasurer to compare with the monthly bank statement.

**[25] Gleim #: 10.3.125 -- Source: CMA 1287 5-10**

(Refers to Fact Pattern #1)

What is the appropriate description that should be placed in symbol D?

- A. Reconcile cash balances.
- B. Proof report.
- C. Attach batch total to report and file.
- D. Compare batch total and correct as necessary.

**[26] Gleim #: 10.3.126 -- Source: CMA 1287 5-11**

(Refers to Fact Pattern #1)

What is the appropriate description that should be placed in symbol E?

- A. Cash projection file.
- B. Bad debts master file.
- C. Remittance advice master file.
- D. Accounts receivable master file.

**[29] Gleim #: 10.3.129 -- Source: CMA 0205 1-31**

A company's management is concerned about computer data eavesdropping and wants to maintain the confidentiality of its information as it is transmitted. The company should utilize

- A. Password codes.
- B. Dial back systems.
- C. Data encryption.
- D. Message acknowledgment procedures.

**[32] Gleim #: 10.3.132 -- Source: CMA 0205 1-32**

Which one of the following would most compromise the use of the grandfather-father-son principle of file retention as protection against loss or damage of master files?

- A. Use of magnetic tape.
- B. Storing of all files in one location.
- C. Inadequate ventilation.
- D. Failure to encrypt data.

**[34] Gleim #: 10.3.134 -- Source: CMA 0408 1-132**

Confidential data can be securely transmitted over the Internet by using

- A. Encryption.
- B. Digital signatures.
- C. Single-use passwords.
- D. Firewalls.

**[35] Gleim #: 10.3.135 -- Source: CMA 0408 1-133**

All of the following are examples of encryption techniques used for computer security **except**

- A. Public key.
- B. Authentication key.
- C. Primary key.
- D. Private key.

**[36] Gleim #: 10.3.136 -- Source: CMA 0408 1-135**

When attempting to restore computing facilities at an alternate site following a disaster, which one of the following should be restored first?

- A. Decision support system.
- B. Online system.
- C. Operating system.
- D. Batch system.

**[37] Gleim #: 10.3.137 -- Source: CMA1 0313-(68)**

The IT team of a company created a disaster recovery plan for their employer. The plan includes several versions of backups of data and systems, including at least one copy kept off site. The plan also includes an off-site location selected for its reduced chance of natural disasters like floods and hurricanes. This location is guarded by a security service. The IT manager has a copy of the plan at home, and the plan is regularly tested. Select the statement below that best describes the plan.

- A. The disaster recovery plan has everything required because the company can access the data backups and continue processing.
- B. The disaster plan needs to ensure that there are copies of the disaster recovery plan accessible on the computer system.
- C. The disaster recovery plan needs to include a disaster recovery site that is a hot or cold site with necessary capabilities.
- D. The disaster recovery plan needs to include instructions for appointing a recovery team when a disaster occurs.

Gleim CMA Test Prep: Part 1: Financial Planning, Performance, and Control  
Answer Key  
(13 Questions)

- 19) A
- 21) B
- 22) D
- 23) C
- 24) A
- 25) D
- 26) D
- 29) C
- 32) B
- 34) A
- 35) C
- 36) C
- 37) D



The logo features the letters 'CMA' in a bold, serif font. The 'C' and 'M' are dark blue, while the 'A' is a lighter blue. The letters are set against a white background with a subtle blue shadow effect.

*IMA's Certification for  
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# CMA Exam Support Package

## Part 1

## CMA Part 1 – Financial Planning, Performance and Control Examination Practice Questions

### Section A: Planning, Budgeting and Forecasting

1. *CSO: 1A1a LOS: 1A1b*  
Cerawell Products Company is a ceramics manufacturer that is facing several challenges in its operations due to economic and industry conditions. The company is currently preparing its annual plan and budget. Which one of the following is subject to the **least** control by the management of Cerawell in the current fiscal year?
  - a. A new machine that was purchased this year has not helped reduce Cerawell's unfavorable labor efficiency variances.
  - b. A competitor has achieved an unexpected technological breakthrough that has given them a significant quality advantage, and has caused Cerawell to lose market share.
  - c. Vendors have asked that the contract price for the goods they supply to Cerawell be renegotiated and adjusted for inflation.
  - d. Experienced employees have decided to terminate their employment with Cerawell and go to work for the competition.
  
2. *CSO: 1A1a LOS: 1A1e*  
All of the following are advantages of the use of budgets in a management control system **except** that budgets
  - a. force management planning.
  - b. provide performance criteria.
  - c. promote communication and coordination within the organization.
  - d. limit unauthorized expenditures.
  
3. *CSO: 1A1b LOS: 1A1e*  
In developing the budget for the next year, which one of the following approaches would most likely result in a successful budget with the **greatest** amount of positive motivation and goal congruence?
  - a. Permit the divisional manager to develop the goal for the division that in the manager's view will generate the greatest amount of profits.
  - b. Have senior management develop the overall goals and permit the divisional manager to determine how these goals will be met.
  - c. Have the divisional and senior management jointly develop goals and objectives while constructing the corporation's overall plan of operation.
  - d. Have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.

4. *CSO: 1A1b LOS: 1A1e*  
Which one of the following statements concerning approaches for the budget development process is **correct**?
- a. The authoritative approach to budgeting discourages strict adherence to strategic organizational goals.
  - b. To prevent ambiguity, once departmental budgeted goals have been developed, they should remain fixed even if the sales forecast upon which they are based proves to be wrong in the middle of the fiscal year.
  - c. With the information technology available, the role of budgets as an organizational communication device has declined.
  - d. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.
5. *CSO: 1A1b LOS: 1A1e*  
Which one of the following items would **most** likely cause the planning and budgeting system to fail? The lack of
- a. historical financial data.
  - b. input from several levels of management.
  - c. top management support.
  - d. adherence to rigid budgets during the year.
6. *CSO: 1A1b LOS: 1A1e*  
All of the following are disadvantages of authoritative budgeting as opposed to participatory budgeting, **except** that it
- a. may result in a budget that is not possible to achieve.
  - b. may limit the acceptance of proposed goals and objectives.
  - c. reduces the communication between employees and management.
  - d. reduces the time required for budgeting.
7. *CSO: 1A1d LOS: 1A1m*  
All of the following statements concerning standard costs are correct **except** that
- a. time and motion studies are often used to determine standard costs.
  - b. standard costs are usually set for one year.
  - c. standard costs can be used in costing inventory accounts.
  - d. standard costs are usually stated in total, while budgeted costs are usually stated on a per-unit basis.

8. *CSO: 1A1d LOS: 1A1o*  
One approach for developing standard costs incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management. This approach would **best** be characterized as a(n)
- imposed approach.
  - authoritative approach.
  - engineering approach.
  - participative approach.
9. *CSO: 1A1d LOS: 1A1n*  
When compared with ideal standards, practical standards
- produce lower per-unit product costs.
  - result in a less desirable basis for the development of budgets.
  - incorporate very generous allowances for spoilage and worker inefficiencies.
  - serve as a better motivating target for manufacturing personnel.
10. *CSO: 1A1d LOS: 1A1q*  
Jura Corporation is developing standards for the next year. Currently XZ-26, one of the material components, is being purchased for \$36.45 per unit. It is expected that the component's cost will increase by approximately 10% next year and the price could range from \$38.75 to \$44.18 per unit depending on the quantity purchased. The appropriate standard for XZ-26 for next year should be set at the
- current actual cost plus the forecasted 10% price increase.
  - lowest purchase price in the anticipated range to keep pressure on purchasing to always buy in the lowest price range.
  - highest price in the anticipated range to insure that there are only favorable purchase price variances.
  - price agreed upon by the purchasing manager and the appropriate level of company management.
11. *CSO: 1A1d LOS: 1A1m*  
Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?
- Company A does not differentiate between variable and fixed overhead in calculating its overhead variances.
  - Company B uses the prior year's average actual cost as the current year's standard.
  - Company C investigates only negative variances.
  - Company D constantly revises standards to reflect learning curves.

12. *CSO: 1A1d LOS: 1A1m*

After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be **inconsistent** with the consultant's conclusion?

- a. A review of performance reports revealed the presence of many unfavorable efficiency variances.
- b. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
- c. Management noted that minimal incentive bonuses have been paid in recent periods.
- d. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases on output being followed by rapid, sustained declines.

13. *CSO: 1A2a LOS: 1A2a*

For cost estimation simple regression differs from multiple regression in that simple regression uses only

- a. one dependent variable, while multiple regression uses all available data to estimate the cost function.
- b. dependent variables, while multiple regression can use both dependent and independent variables.
- c. one independent variable, while multiple regression uses more than one independent variable.
- d. one dependent variable, while multiple regression uses more than one dependent variable.

14. *CSO: 1A2a LOS: 1A2a*

A company has accumulated data for the last 24 months in order to determine if there is an independent variable that could be used to estimate shipping costs. Three possible independent variables being considered are packages shipped, miles shipped, and pounds shipped. The quantitative technique that should be used to determine whether any of these independent variables might provide a good estimate for shipping costs is

- a. flexible budgeting.
- b. linear programming.
- c. linear regression.
- d. variable costing.

15. CSO: 1A2a LOS: 1A2b

Dawson Manufacturing developed the following multiple regression equation, utilizing many years of data, and uses it to model, or estimate, the cost of its product.

$$\text{Cost} = \text{FC} + a*L + b*M$$

Where: FC = fixed costs

L = labor rate per hour

M = material cost per pound

Which one of the following changes would have the **greatest** impact on invalidating the results of this model?

- a. A significant reduction in factory overheads, which are a component of fixed costs.
- b. Renegotiation of the union contract calling for much higher wage rates.
- c. A large drop in material costs, as a result of purchasing the material from a foreign source.
- d. A significant change in labor productivity.

16. CSO: 1A2a LOS: 1A2c

In order to analyze sales as a function of advertising expenses, the sales manager of Smith Company developed a simple regression model. The model included the following equation, which was based on 32 monthly observations of sales and advertising expenses with a related coefficient of determination of .90.

$$S = \$10,000 + \$2.50A$$

S = sales

A = advertising expenses

If Smith Company's advertising expenses in one month amounted to \$1,000, the related point estimate of sales would be

- a. \$2,500.
- b. \$11,250.
- c. \$12,250.
- d. \$12,500.

17. CSO: 1A2a LOS: 1A2a

The results of regressing Y against X are as follows.

	<u>Coefficient</u>
Intercept	5.23
Slope	1.54

When the value of X is 10, the estimated value of Y is

- a. 6.78.
- b. 8.05.
- c. 20.63.
- d. 53.84.

18. CSO: 1A2b LOS: 1A2d

Which one of the following techniques would **most** likely be used to analyze reductions in the time required to perform a task as experience with that task increases?

- a. Regression analysis.
- b. Learning curve analysis.
- c. Sensitivity analysis.
- d. Normal probability analysis.

19. CSO: 1A2b LOS: 1A2e

Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used and eight units are produced, the cumulative average direct labor hours required per unit of the product will be

- a. 5,120 hours.
- b. 6,400 hours.
- c. 8,000 hours.
- d. 10,000 hours.

20. CSO: 1A2b LOS: 1A2d

A manufacturing firm plans to bid on a special order of 80 units that will be manufactured in lots of 10 units each. The production manager estimates that the direct labor hours per unit will decline by a constant percentage each time the cumulative quantity of units produced doubles. The quantitative technique used to capture this phenomenon and estimate the direct labor hours required for the special order is

- a. cost-profit-volume analysis.
- b. the Markov process.
- c. linear programming analysis.
- d. learning curve analysis.

21. CSO: 1A2b LOS: 1A2e

A manufacturing company has the opportunity to submit a bid for 20 units of a product on which it has already produced two 10-unit lots. The production manager believes that the learning experience observed on the first two lots will continue for at least the next two lots. The direct labor required on the first two lots was as follows.

- 5,000 direct labor hours for the first lot of 10 units
- 3,000 additional direct labor hours for the second lot of 10 units

The learning rate experienced by the company on the first two lots of this product is

- a. 40.0%.
- b. 60.0%.
- c. 62.5%.
- d. 80.0%.

22. CSO: 1A2b LOS: 1A2e

Aerosub Inc. has developed a new product for spacecraft that includes the manufacture of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used, the cumulative direct labor hours required for producing a total of eight units would be

- a. 29,520 hours.
- b. 40,960 hours.
- c. 64,000 hours.
- d. 80,000 hours.

23. CSO: 1A2b LOS: 1A2e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

Cumulative number of units produced	Manufacturing Projections	
	Average cost per unit	Total costs
1	\$20,000	\$20,000
2	14,000	28,000

If Propeller manufactures eight propellers, the total manufacturing cost would be

- a. \$50,660.
- b. \$54,880.
- c. \$62,643.
- d. \$112,000.



24. CSO: 1A2b LOS: 1A2e

Martin Fabricating uses a cumulative average-time learning curve model to monitor labor costs. Data regarding two recently completed batches of a part that is used in tractor-trailer rigs is as follows.

<u>Batch Number</u>	<u>Number of Units</u>	<u>Cumulative Average Hours Per Unit</u>
1	50	20
2	50	16

If the same rate of learning continues for the next several batches produced, which of the following best describes (1) the type (i.e., degree) of learning curve that the firm is experiencing and (2) the average hours per unit for units included in the 201-400 range of units produced (i.e., the last 200 units)?

	<u>Type (Degree) of Learning Curve</u>	<u>Average Hours Per Unit for Units 201-400</u>
a.	20%	10.24.
b.	80%	10.24.
c.	80%	7.68.
d.	20%	3.84.

25. CSO: 1A2b LOS: 1A2e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

If Propeller produces eight units, the average manufacturing cost per unit will be

- a. \$1,647.
- b. \$6,860.
- c. \$9,800.
- d. \$14,000.

26. CSO: 1A2b LOS: 1A2e

In competing as a subcontractor on a military contract, Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. Accordingly, management estimates an 80% learning curve would apply to this unit. The overall contract will call for supplying eight units. Production of the first unit requires 10,000 direct labor hours. The estimated total direct labor hours required to produce the seven additional units would be

- a. 30,960 hours.
- b. 40,960 hours.
- c. 56,000 hours.
- d. 70,000 hours.

27. CSO: 1A2b LOS: 1A2e

A manufacturing company required 800 direct labor hours to produce the first lot of four units of a new motor. Management believes that a 90% learning curve will be experienced over the next four lots of production. How many direct labor hours will be required to manufacture the **next** 12 units?

- a. 1,792.
- b. 1,944.
- c. 2,016.
- d. 2,160.

28. CSO: 1A2b LOS: 1A2e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

The estimated cost of an order for seven additional propellers, after completing production of the first propeller, would be

- a. \$34,880.
- b. \$54,880.
- c. \$92,000.
- d. \$98,000.

29. CSO: 1A2c LOS: 1A2f

Sales of big-screen televisions have grown steadily during the past five years. A dealer predicted that the demand for February would be 148 televisions. Actual demand in February was 158 televisions. If the smoothing constant is  $\alpha=0.3$ , the demand forecast for March, using the exponential smoothing model, will be

- a. 148 televisions.
- b. 151 televisions.
- c. 153 televisions.
- d. 158 televisions.

30. CSO: 1A2e LOS: 1A2i

Johnson Software has developed a new software package. Johnson's sales manager has prepared the following probability distribution describing the relative likelihood of monthly sales levels and relative income (loss) for the company's new software package.

Monthly Sales In Units	Probability	Income (Loss)
10,000	.2	\$(4,000)
20,000	.3	10,000
30,000	.3	30,000
40,000	.2	60,000

If Johnson decides to market its new software package, the expected value of additional monthly income will be

- a. \$23,200.
- b. \$24,000.
- c. \$24,800.
- d. \$25,000.

31. CSO: 1A2e LOS: 1A2i

According to recent focus sessions, Norton Corporation has a "can't miss" consumer product on its hands. Sales forecasts indicate either excellent or good results, with Norton's sales manager assigning a probability of .6 to a good results outcome. The company is now studying various sales compensation plans for the product and has determined the following contribution margin data.

	Contribution Margin
If sales are excellent and	
Plan 1 is adopted	\$300,000
Plan 2 is adopted	370,000
If sales are good and	
Plan 1 is adopted	240,000
Plan 2 is adopted	180,000

On the basis of this information, which of the following statements is **correct**?

- a. Plan 2 should be adopted because it is \$10,000 more attractive than Plan 1.
- b. Plan 1 should be adopted because it is \$8,000 more attractive than Plan 2.
- c. Plan 1 should be adopted because of the sales manager's higher confidence in good results.
- d. Either Plan should be adopted, the decision being dependent on the probability of excellent sales results.

32. *CSO: 1A2e LOS: 1A2i*

Denton Inc. manufactures industrial machinery and requires 100,000 switches per year in its assembly process. When switches are received from a vendor they are installed in the specific machine and tested. If the switches fail, they are scrapped and the associated labor cost of \$25 is considered lost productivity. Denton purchases "off the shelf" switches as opposed to custom-made switches and experiences quality problems with some vendors' products. A decision must be made as to which vendor to buy from during the next year based on the following information.

<u>Vendor</u>	<u>Price per switch</u>	<u>Percentage expected to pass the test</u>
P	\$35	90%
Q	37	94%
R	39	97%
S	40	99%

Which vendor should Denton's controller recommend to management?

- a. Vendor P.
- b. Vendor Q.
- c. Vendor R.
- d. Vendor S.

33. *CSO: 1A2e LOS: 1A2i*

Scarf Corporation's controller has decided to use a decision model to cope with uncertainty. With a particular proposal, currently under consideration, Scarf has two possible actions, invest or not invest in a joint venture with an international firm. The controller has determined the following.

Action 1: Invest in the Joint Venture

Events and Probabilities:

Probability of success = 60%.

Cost of investment = \$9.5 million.

Cash flow if investment is successful = \$15.0 million.

Cash flow if investment is unsuccessful = \$2.0 million.

Additional costs to be paid = \$0

Costs incurred up to this point = \$650,000.

Action 2: Do Not Invest in the Joint Venture

Events

Costs incurred up to this point = \$650,000.

Additional costs to be paid = \$100,000.

Which one of the following alternatives correctly reflects the respective expected values of investing versus not investing?

- a. \$300,000 and \$(750,000).
- b. \$(350,000) and \$(100,000).
- c. \$300,000 and (100,000).
- d. \$(350,000) and \$(750,000).

34. CSO: 1A2e LOS: 1A2i

Allbee Company has three possible investment opportunities. The controller calculated the payoffs and probabilities, as follows.

<u>Payoffs</u>	<u>P r o b a b i l i t i e s</u>		
	<u>Investment A</u>	<u>Investment B</u>	<u>Investment C</u>
\$(20,000)	.3	.2	.3
(10,000)	.1	.2	.1
30,000	.3	.2	.2
70,000	.2	.2	.3
100,000	.1	.2	.1

The cost of investments A, B, and C are the same. Using the expected-value criterion, which one of the following rankings of these investments, from highest payoff to lowest payoff, is correct?

- a. A, B, C.
- b. B, A, C.
- c. C, A, B.
- d. B, C, A.

35. CSO: 1A2e LOS: 1A2i

The sales manager of Serito Doll Company has suggested that an expanded advertising campaign costing \$40,000 would increase the sales and profits of the company. He has developed the following probability distribution for the effect of the advertising campaign on company sales.

<u>Sales increase (units)</u>	<u>Probability</u>
15,000	.10
30,000	.35
45,000	.10
60,000	.25
75,000	.20

The company sells the dolls at \$5.20 each. The cost of each doll is \$3.20. Serito's expected incremental profit, if the advertising campaign is adopted, would be

- a. \$6,500.
- b. \$46,500.
- c. \$53,000.
- d. \$93,000.

36. CSO: 1A2e LOS: 1A2i

Stock X has the following probability distribution of expected future returns.

<u>Probability</u>	<u>Expected Return</u>
.10	-20%
.20	5%
.40	15%
.20	20%
.10	30%

The expected rate of return on stock X would be

- a. 10%.
- b. 12%.
- c. 16%.
- d. 19%.

37. CSO: 1A2e LOS: 1A2i

Which one of the following four probability distributions provides the highest expected monetary value?

<u>Alternative #1</u>		<u>Alternative #2</u>		<u>Alternative #3</u>		<u>Alternative #4</u>	
Cash		Cash		Cash		Cash	
<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>
10%	\$50,000	10%	\$50,000	10%	\$50,000	10%	\$150,000
20%	75,000	20%	75,000	20%	75,000	20%	100,000
40%	100,000	45%	100,000	40%	100,000	40%	75,000
30%	150,000	25%	150,000	30%	125,000	30%	50,000

- a. Alternative #1.
- b. Alternative #2.
- c. Alternative #3.
- d. Alternative #4.

38. CSO: 1A2e LOS: 1A2i

The Lions Club is planning to sell pretzels at a local football game and has estimated sales demand as follows.

Sales demand	8,000	10,000	12,000	15,000
Probability	10%	40%	30%	20%

The cost of the pretzels varies with the quantity purchased as follows.

Purchase quantity	8,000	10,000	12,000	15,000
Cost per unit	\$1.25	\$1.20	\$1.15	\$1.10

Any unsold pretzels would be donated to the local food bank. The calculated profits at the various sales demand levels and purchase quantities are as follows.

	<u>Expected Profits at Various Purchase Quantity Levels</u>			
<u>Sales Demand</u>	<u>8,000</u>	<u>10,000</u>	<u>12,000</u>	<u>15,000</u>
8,000	\$6,000	\$4,000	\$ 2,200	\$ (500)
10,000	6,000	8,000	6,200	3,500
12,000	6,000	8,000	10,200	7,500
15,000	6,000	8,000	10,200	13,500

Which one of the following purchase quantities would you recommend to the Lions Club?

- a. 8,000.
- b. 10,000.
- c. 12,000.
- d. 15,000.

39. CSO: 1A3a LOS: 1A3d

All of the following are criticisms of the traditional budgeting process **except** that it

- a. makes across-the-board cuts when early budget iterations show that planned expenses are too high.
- b. incorporates non-financial measures as well as financial measures into its output.
- c. overemphasizes a fixed time horizon such as one year.
- d. is not used until the end of the budget period to evaluate performance.

40. CSO: 1A3a LOS: 1A3b

Many companies use comprehensive budgeting in planning for the next year's activities. When both an operating budget and a financial budget are prepared, which one of the following is **correct** concerning the financial budget?

Included in the Financial Budget			
	<u>Capital Budget</u>	<u>Pro-forma Balance Sheet</u>	<u>Cash Budget</u>
a.	Yes	No	Yes.
b.	No	Yes	No.
c.	Yes	Yes	Yes.
d.	No	No	No.

41. CSO: 1A3a LOS: 1A3b

What would be the correct chronological order of preparation for the following budgets?

- I. Cost of goods sold budget.
- II. Production budget.
- III. Purchases budget.
- IV. Administrative budget.

- a. I, II, III, IV.
- b. III, II, IV, I.
- c. IV, II, III, I.
- d. II, III, I, IV.

42. CSO: 1A3a LOS: 1A3c

Which one of the following **best** describes the order in which budgets should be prepared when developing the annual master operating budget?

- a. Production budget, direct material budget, revenue budget.
- b. Production budget, revenue budget, direct material budget.
- c. Revenue budget, production budget, direct material budget.
- d. Revenue budget, direct material budget, production budget.

43. CSO: 1A3d LOS: 1A3a

A budgeting approach that requires a manager to justify the entire budget for each budget period is known as

- a. performance budgeting.
- b. program budgeting.
- c. zero-base budgeting.
- d. incremental budgeting.



44. CSO: 1A3f LOS: 1A3d

Rainbow Inc. recently appointed Margaret Joyce as vice president of finance and asked her to design a new budgeting system. Joyce has changed to a monthly budgeting system by dividing the company's annual budget by twelve. Joyce then prepared monthly budgets for each department and asked the managers to submit monthly reports comparing actual to budget. A sample monthly report for Department A is shown below.

Rainbow Inc.  
Monthly Report for Department A

	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
<u>Units</u>	1,000	900	100F
Variable production costs			
Direct material	\$2,800	\$2,700	\$100U
Direct labor	4,800	4,500	300U
Variable factory overhead	4,250	4,050	200U
Fixed costs			
Depreciation	3,000	2,700	300U
Taxes	1,000	900	100U
Insurance	1,500	1,350	150U
Administration	1,100	990	110U
Marketing	<u>1,000</u>	<u>900</u>	<u>100U</u>
Total costs	<u>\$19,450</u>	<u>\$18,090</u>	<u>\$1,360U</u>

This monthly budget has been imposed from the top and will create behavior problems. All of the following are causes of such problems **except**

- the use of a flexible budget rather than a fixed budget.
- top management authoritarian attitude toward the budget process.
- the inclusion of non-controllable costs such as depreciation.
- the lack of consideration for factors such as seasonality.

45. CSO: 1A3f LOS: 1A3b

When compared to static budgets, flexible budgets

- offer managers a more realistic comparison of budget and actual fixed cost items under their control.
- provide a better understanding of the capacity variances during the period being evaluated.
- encourage managers to use less fixed costs items and more variable cost items that are under their control.
- offer managers a more realistic comparison of budget and actual revenue and cost items under their control.

46. CSO: 1A3f LOS: 1A3a

Country Ovens is a family restaurant chain. Due to an unexpected road construction project, traffic passing by the Country Ovens restaurant in Newtown has significantly increased. As a result, restaurant volume has similarly increased well beyond the level expected. Which type of budget would be **most** appropriate in helping the restaurant manager plan for restaurant labor costs?

- a. Zero-based budget.
- b. Rolling budget.
- c. Activity-based budget.
- d. Flexible budget.

47. CSO: 1A4a LOS: 1A4c

Netco's sales budget for the coming year is as follows.

<u>Item</u>	<u>Volume in Units</u>	<u>Sales Price</u>	<u>Sales Revenue</u>
1	200,000	\$50	\$10,000,000
2	150,000	10	1,500,000
3	300,000	30	<u>9,000,000</u>
Total sales revenue			<u>\$20,500,000</u>

Items 1 and 3 are different models of the same product. Item 2 is a complement to Item 1. Past experience indicates that the sales volume of Item 2 relative to the sales volume of Item 1 is fairly constant. Netco is considering an 10% price increase for the coming year for Item 1, which will cause sales of Item 1 to decline by 20%, while simultaneously causing sales of Item 3 to increase by 5%. If Netco institutes the price increase for Item 1, total sales revenue will decrease by

- a. \$1,050,000.
- b. \$850,000.
- c. \$750,000.
- d. \$550,000.

48. CSO: 1A4a LOS: 1A4i

Hannon Retailing Company prices its products by adding 30% to its cost. Hannon anticipates sales of \$715,000 in July, \$728,000 in August, and \$624,000 in September. Hannon's policy is to have on hand enough inventory at the end of the month to cover 25% of the next month's sales. What will be the cost of the inventory that Hannon should budget for purchase in August?

- a. \$509,600.
- b. \$540,000.
- c. \$560,000.
- d. \$680,000.

49. *CSO: 1A4a LOS: 1A4f*  
Streeter Company produces plastic microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. How many units should Streeter produce in the second quarter?
- a. 72,000 units.
  - b. 75,000 units.
  - c. 78,000 units.
  - d. 84,000 units.
50. *CSO: 1A4a LOS: 1A4f*  
Ming Company has budgeted sales at 6,300 units for the next fiscal year, and desires to have 590 good units on hand at the end of that year. Beginning inventory is 470 units. Ming has found from past experience that 10% of all units produced do not pass final inspection, and must therefore be destroyed. How many units should Ming plan to produce in the next fiscal year?
- a. 6,890.
  - b. 7,062.
  - c. 7,133.
  - d. 7,186.
51. *CSO: 1A4a LOS: 1A4f*  
Savior Corporation assembles backup systems for home computers. For the first quarter, the budget for sales is 67,500 units. Savior will finish the fourth quarter of last year with an inventory of 3,500 units, of which 200 are obsolete. The target ending inventory is 10 days of sales (based upon 360 days). What is the budgeted production for the first quarter?
- a. 75,000.
  - b. 71,700.
  - c. 71,500.
  - d. 64,350

52. CSO: 1A4a LOS: 1A4f

Streeter Company produces microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter usually maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. However, due to a work stoppage, the finished goods inventory at the end of the first quarter is 8,000 units less than it should be. How many units should Streeter produce in the second quarter?

- a. 75,000 units.
- b. 78,000 units.
- c. 80,000 units.
- d. 86,000 units.

53. CSO: 1A4a LOS: 1A4f

Data regarding Rombus Company's budget are shown below.

Planned sales	4,000 units
Material cost	\$2.50 per pound
Direct labor	3 hours per unit
Direct labor rate	\$7 per hour
Finished goods beginning inventory	900 units
Finished goods ending inventory	600 units
Direct materials beginning inventory	4,300 units
Direct materials ending inventory	4,500 units
Materials used per unit	6 pounds

Rombus Company's production budget will show total units to be produced of

- a. 3,700.
- b. 4,000.
- c. 4,300.
- d. 4,600.

54. CSO: 1A4a LOS: 1A4f

Krouse Company is in the process of developing its operating budget for the coming year. Given below are selected data regarding the company's two products, laminated putter heads and forged putter heads, that are sold through specialty golf shops.

	Putter Heads	
	Forged	Laminated
Raw materials		
Steel	2 pounds @ \$5/lb.	1 pound @ \$5/lb.
Copper	None	1 pound @ \$15/lb.
Direct labor	1/4 hour @ \$20/hr.	1 hour @ \$22/hr.
Expected sales (units)	8,200	2,000
Selling price per unit	\$30	\$80
Ending inventory target (units)	100	60
Beginning inventory (units)	300	60
Beginning inventory (cost)	\$5,250	\$3,120

Manufacturing overhead is applied to units produced on the basis of direct labor hours. Variable manufacturing overhead is projected to be \$25,000, and fixed manufacturing overhead is expected to be \$15,000.

The estimated cost to produce one unit of the laminated putter head is

- a. \$42.
- b. \$46.
- c. \$52.
- d. \$62.

55. *CSO: 1A4a LOS: 1A4d*

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A partial schedule of cash collections for January through March of the coming year reveals the following receipts for the period.

	Cash Receipts		
	January	February	March
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000

Other information includes the following.

- Inventories are maintained at 30% of the following month's sales.
- Assume that March sales total \$150,000.

The number of units to be purchased in February is

- a. 3,850 units.
- b. 4,900 units.
- c. 6,100 units.
- d. 7,750 units.

56. CSO: 1A4a LOS: 1A4i

Stevens Company manufactures electronic components used in automobile manufacturing. Each component uses two raw materials, Geo and Clio. Standard usage of the two materials required to produce one finished electronic component, as well as the current inventory, are shown below.

<u>Material</u>	<u>Standard Per Unit</u>	<u>Price</u>	<u>Current Inventory</u>
Geo	2.0 pounds	\$15/lb.	5,000 pounds
Clio	1.5 pounds	\$10/lb.	7,500 pounds

Stevens forecasts sales of 20,000 components for the next two production periods. Company policy dictates that 25% of the raw materials needed to produce the next period's projected sales be maintained in ending direct materials inventory.

Based on this information, the budgeted direct material purchases for the coming period would be

	<u>Geo</u>	<u>Clio</u>
a.	\$450,000	\$450,000.
b.	\$675,000	\$300,000.
c.	\$675,000	\$400,000.
d.	\$825,000	\$450,000.

57. CSO: 1A4a LOS: 1A4i

Petersons Planters Inc. budgeted the following amounts for the coming year.

Beginning inventory, finished goods	\$ 10,000
Cost of goods sold	400,000
Direct material used in production	100,000
Ending inventory, finished goods	25,000
Beginning and ending work-in-process inventory	Zero

Overhead is estimated to be two times the amount of direct labor dollars. The amount that should be budgeted for direct labor for the coming year is

- a. \$315,000.
- b. \$210,000.
- c. \$157,500.
- d. \$105,000.

58. CSO: 1A4a LOS: 1A4i

Over the past several years, McFadden Industries has experienced the following regarding the company's shipping expenses.

Fixed costs	\$16,000
Average shipment	15 pounds
Cost per pound	\$.50

Shown below are McFadden's budget data for the coming year.

Number of units shipped	8,000
Number of sales orders	800
Number of shipments	800
Total sales	\$1,200,000
Total pounds shipped	9,600

McFadden's expected shipping costs for the coming year are

- a. \$4,800.
  - b. \$16,000.
  - c. \$20,000.
  - d. \$20,800.
59. CSO: 1A4a LOS: 1A4g
- Swan Company is a maker of men's slacks. The company would like to maintain 20,000 yards of fabric in ending inventory. The beginning fabric inventory is expected to contain 25,000 yards. The expected yards of fabric needed for sales is 90,000. Compute the yards of fabric that Swan needs to purchase.
- a. 85,000.
  - b. 90,000.
  - c. 95,000.
  - d. 135,000.
60. CSO: 1A4a LOS: 1A4g
- Manoli Gift Shop maintains a 35% gross profit margin percentage, and carries an ending inventory balance each month sufficient to support 30% of the next month's expected sales. Anticipated sales for the fourth quarter are as follows.

October	\$42,000
November	58,000
December	74,000

What amount of goods should Manoli Gift Shop plan to purchase during the month of November?

- a. \$40,820.
- b. \$51,220.
- c. \$52,130.
- d. \$62,800.

61. CSO: 1A4a LOS: 1A4g

In preparing the direct material purchases budget for next quarter, the plant controller has the following information available.

Budgeted unit sales	2,000
Pounds of materials per unit	4
Cost of materials per pound	\$3
Pounds of materials on hand	400
Finished units on hand	250
Target ending units inventory	325
Target ending inventory of pounds of materials	800

How many pounds of materials must be purchased?

- a. 2,475.
- b. 7,900.
- c. 8,700.
- d. 9,300.

62. CSO: 1A4a LOS: 1A4g

Playtime Toys estimates that it will sell 200,000 dolls during the coming year. The beginning inventory is 12,000 dolls; the target ending inventory is 15,000 dolls. Each doll requires two shoes which are purchased from an outside supplier. The beginning inventory of shoes is 20,000; the target ending inventory is 18,000 shoes. The number of shoes that should be purchased during the year is

- a. 396,000 shoes.
- b. 398,000 shoes.
- c. 402,000 shoes.
- d. 404,000 shoes.

63. CSO: 1A4a LOS: 1A4g

Maker Distributors has a policy of maintaining inventory at 15% of the next month's forecasted sales. The cost of Maker's merchandise averages 60% of the selling price. The inventory balance as of May 31 is \$63,000, and the forecasted dollar sales for the last seven months of the year are as follows.



June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

What is the budgeted dollar amount of Maker's purchases for July?

- a. \$355,500.
- b. \$360,000.
- c. \$364,500.
- d. \$399,000.

64. CSO: 1A4a LOS: 1A4j

The pro forma statement of employee benefit costs, a budget schedule that is prepared as part of an organization's annual profit plan, would include costs related to

- a. employees' gross wages and salaries and the related company-paid benefits.
- b. employees' net wages and salaries and the related company-paid benefits.
- c. all payroll related deductions withheld from employees and company-paid benefits.
- d. company-paid benefits and company-paid payroll taxes.

65. CSO: 1A4a LOS: 1A4n

All of the following would appear on a projected schedule of cost of goods manufactured **except** for

- a. ending work-in-process inventory.
- b. beginning finished goods inventory.
- c. the cost of raw materials used.
- d. applied manufacturing overhead.

66. CSO: 1A4a LOS: 1A4k

A company that manufactures furniture is establishing its budget for the upcoming year. All of the following items would appear in its overhead budget **except** for the

- a. overtime paid to the workers who perform production scheduling.
- b. cost of glue used to secure the attachment of the legs to the tables.
- c. fringe benefits paid to the production supervisor.
- d. freight charges paid for the delivery of raw materials to the company.

67. CSO: 1A4a LOS: 1A4m

Using the following budget data for Valley Corporation, which produces only one product, calculate the company's predetermined factory overhead application rate for variable overhead.

Units to be produced	11,000
Units to be sold	10,000
Indirect materials, varying with production	\$ 1,000
Indirect labor, varying with production	10,000
Factory supervisor's salary, incurred regardless of production	20,000
Depreciation on factory building and equipment	30,000
Utilities to operate factory machines	12,000
Security lighting for factory	2,000
Selling, general and administrative expenses	5,000

- a. \$2.09.
- b. \$2.30.
- c. \$4.73.
- d. \$5.20.

68. CSO: 1A4a LOS: 1A4n

Given the following data for Scurry Company, what is the cost of goods sold?

Beginning inventory of finished goods	\$100,000
Cost of goods manufactured	700,000
Ending inventory of finished goods	200,000
Beginning work-in-process inventory	300,000
Ending work-in-process inventory	50,000

- a. \$500,000.
- b. \$600,000.
- c. \$800,000.
- d. \$950,000.

69. CSO: 1A4a LOS: 1A4p

Tut Company's selling and administrative costs for the month of August, when it sold 20,000 units, were as follows.

	Costs	
	<u>Per Unit</u>	<u>Total</u>
Variable costs	\$18.60	\$372,000
Step costs	4.25	85,000
Fixed costs	<u>8.80</u>	<u>176,000</u>
Total selling and administrative costs	<u>\$31.65</u>	<u>\$633,000</u>

The variable costs represent sales commissions paid at the rate of 6.2% of sales. The step costs depend on the number of salespersons employed by the company. In August there were 17 persons on the sales force. However, two members have taken early retirement effective August 31. It is anticipated that these positions will remain vacant for several months. Total fixed costs are unchanged within a relevant range of 15,000 to 30,000 units per month. Tut is planning a sales price cut of 10%, which it expects will increase sales volume to 24,000 units per month. If Tut implements the sales price reduction, the total budgeted selling and administrative costs for the month of September would be

- a. \$652,760.
- b. \$679,760.
- c. \$714,960.
- d. \$759,600.

70. *CSO: 1A4b LOS: 1A4y*

Granite Company sells products exclusively on account, and has experienced the following collection pattern: 60% in the month of sale, 25% in the month after sale, and 15% in the second month after sale. Uncollectible accounts are negligible. Customers who pay in the month of sale are given a 2% discount. If sales are \$220,000 in January, \$200,000 in February, \$280,000 in March, and \$260,000 in April, Granite's accounts receivable balance on May 1 will be

- a. \$107,120.
- b. \$143,920.
- c. \$146,000.
- d. \$204,000.

71. *CSO: 1A4b LOS: 1A4x*

Myers Company uses a calendar-year and prepares a cash budget for each month of the year. Which one of the following items should be considered when developing July's cash budget?

- a. Federal income tax and social security tax withheld from employee's June paychecks to be remitted to the Internal Revenue Service in July.
- b. Quarterly cash dividends scheduled to be declared on July 15 and paid on August 6 to shareholders of record as of July 25.
- c. Property taxes levied in the last calendar year scheduled to be paid quarterly in the coming year during the last month of each calendar quarter.
- d. Recognition that 0.5% of the July sales on account will be uncollectible.

72. CSO: 1A4b LOS: 1A4x

Brown Company estimates that monthly sales will be as follows.

January	\$100,000
February	150,000
March	180,000

Historical trends indicate that 40% of sales are collected during the month of sale, 50% are collected in the month following the sale, and 10% are collected two months after the sale. Brown's accounts receivable balance as of December 31 totals \$80,000 (\$72,000 from December's sales and \$8,000 from November's sales). The amount of cash Brown can expect to collect during the month of January is

- a. \$76,800.
- b. \$84,000.
- c. \$108,000.
- d. \$133,000.

73. CSO: 1A4b LOS: 1A4x

Cooper Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review.

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase, and the other 50% in the following month. All payments for other expenses are made in the month incurred.

Cooper forecasts the following account balances at the beginning of the quarter.

Cash	\$100,000
Accounts receivable	300,000
Accounts payable (Inventory)	500,000

Given the above information, the projected change in cash during the coming quarter will be

- a. \$412,500.
- b. \$300,000.
- c. \$112,500.
- d. \$ -0-.

74. CSO: 1A4b LOS: 1A4x

Bootstrap Corporation anticipates the following sales during the last six months of the year.

July	\$460,000
August	500,000
September	525,000
October	500,000
November	480,000
December	450,000

20% of Bootstrap's sales are for cash. The balance is subject to the collection pattern shown below.

Percentage of balance collected in the month of sale	40%
Percentage of balance collected in the month following sale	30%
Percentage of balance collected in the second month following sale	25%
Percentage of balance uncollectible	5%

What is the planned net accounts receivable balance as of December 31?

- a. \$279,300.
- b. \$294,000.
- c. \$360,000.
- d. \$367,500.

75. CSO: 1A4b LOS: 1A4x

Projected monthly sales of Wallstead Corporation for January, February, March, and April are as follows.

January	\$300,000
February	340,000
March	370,000
April	390,000

- The company bills each month's sales on the last day of the month.
- Receivables are booked gross and credit terms of sale are: 2/10, n/30.
- 50% of the billings are collected within the discount period, 30% are collected by the end of the month, 15% are collected by the end of the second month, and 5% become uncollectible.

Budgeted cash collections for Wallstead Company during April would be

- a. \$343,300.
- b. \$347,000.
- c. \$349,300.
- d. \$353,000.

76. CSO: 1A4b LOS: 1A4x

Tip-Top Cleaning Supply carries a large number of different items in its inventory, giving the firm a competitive advantage in its industry. Below is part of Tip-Top's budget for the first quarter of next year.

Sales	\$855,000
Cost of goods sold	425,000
Rent and salary expenses	375,000

Historically, all of the sales are on account and are made evenly over the quarter. 5% of all sales are determined to be uncollectible and written off. The balance of the receivables is collected in 50 days. This sales and collection experience is expected to continue in the first quarter. The projected balance sheet for the first day of the quarter includes the following account balances.

Cash	\$ 10,000
Accounts receivable (net)	450,000
Inventory	900,000
Accounts payable	800,000

How much cash can Tip-Top anticipate collecting in the first quarter (based on a 360-day year)?

- a. \$811,000.
- b. \$830,000.
- c. \$901,250.
- d. \$902,500.

77. CSO: 1A4b LOS: 1A4x

Monroe Products is preparing a cash forecast based on the following information.

- Monthly sales: December \$200,000; January \$200,000; February \$350,000; March \$400,000.
- All sales are on credit and collected the month following the sale.
- Purchases are 60% of next month's sales and are paid for in the month of purchase.
- Other monthly expenses are \$25,000, including \$5,000 of depreciation.

If the January beginning cash balance is \$30,000, and Monroe is required to maintain a minimum cash balance of \$10,000, how much short-term borrowing will be required at the end of February?

- a. \$60,000.
- b. \$70,000.
- c. \$75,000.
- d. \$80,000.

78. CSO: 1A4b LOS: 1A4x

Prudent Corporation's budget for the upcoming accounting period reveals total sales of \$700,000 in April and \$750,000 in May. The sales cash collection pattern is

- 20% of each month's sales are cash sales.
- 5% of a month's credit sales are uncollectible.
- 70% of a month's credit sales are collected in the month of sale.
- 25% of a month's credit sales are collected in the month following the sale.

If Prudent anticipates the cash sale of a piece of old equipment in May for \$25,000, May's total budgeted cash receipts would be

- a. \$560,000.
- b. \$702,500.
- c. \$735,000.
- d. \$737,500.

79. CSO: 1A4b LOS: 1A4x

ANNCO sells products on account, and experiences the following collection schedule.

In the month of sale	10%
In the month after sale	60%
In the second month after sale	30%

At December 31, ANNCO reports accounts receivable of \$211,500. Of that amount, \$162,000 is due from December sales, and \$49,500 from November sales. ANNCO is budgeting \$170,000 of sales for January. If so, what amount of cash should be collected in January?

- a. \$129,050.
- b. \$174,500.
- c. \$211,500.
- d. \$228,500.

80. CSO: 1A4b LOS: 1A4x

Brooke Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review.

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase, and 50% in the following month. Payments for all other expenses are made in the month incurred.

Brooke forecasts the following account balances at the beginning of the quarter.

Cash	\$200,000
Accounts receivable	300,000
Accounts payable (Inventory)	400,000

Given the above information, the projected ending cash balance for February will be

- a. \$712,500.
- b. \$500,000.
- c. \$232,500.
- d. \$120,000.

81. CSO: 1A4b LOS: 1A4x

Health Foods Inc. has decided to start a cash budgeting program to improve overall cash management. Information gathered from the past year reveals the following cash collection trends.

- 40% of sales are on credit
- 50% of credit sales are collected in month of sale
- 30% of credit sales are collected first month after sale
- 15% of credit sales are collected second month after sale
- 5% of credit sales result in bad debts

Gross sales for the last five months were as follows.

January	\$220,000
February	240,000
March	250,000
April	230,000
May	260,000



Sales for June are projected to be \$255,000. Based on this information, the expected cash receipts for March would be

- a. \$230,000.
- b. \$237,400.
- c. \$242,000.
- d. \$243,200.

82. CSO: 1A4b LOS: 1A4x

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A schedule of cash collections for January through March of the coming year reveals the following receipts for the period.

	Cash Receipts		
	<u>January</u>	<u>February</u>	<u>March</u>
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000
From March sales			72,000

Other information includes the following.

- Inventories are maintained at 30% of the following month's sales.
- Tidwell desires to keep a minimum cash balance of \$15,000. Total payments in January are expected to be \$106,500, which excludes \$12,000 of depreciation expense. Any required borrowings are in multiples of \$1,000.
- The December 31 balance sheet for the preceding year revealed a cash balance of \$24,900.

Ignoring income taxes, the financing needed in January to maintain the firm's minimum cash balance is

- a. \$8,000.
- b. \$10,600.
- c. \$11,000.
- d. \$23,000.

83. CSO: 1A4b LOS: 1A4x

Data regarding Johnsen Inc.'s forecasted dollar sales for the last seven months of the year and Johnsen's projected collection patterns are as follows.

<u>Forecasted sales</u>	
June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

<u>Types of sales</u>	
Cash sales	30%
Credit sales	70%

<u>Collection pattern on credit sales</u> (5% determined to be uncollectible)	
During the month of sale	20%
During the first month following the sale	50%
During the second month following the sale	25%

Johnsen's budgeted cash receipts from sales and collections on account for September are

- a. \$635,000.
- b. \$684,500.
- c. \$807,000.
- d. \$827,000.

84. CSO: 1A4b LOS: 1A4x

The Mountain Mule Glove Company is in its first year of business. Mountain Mule had a beginning cash balance of \$85,000 for the quarter. The company has a \$50,000 short-term line of credit. The budgeted information for the first quarter is shown below.

	<u>January</u>	<u>February</u>	<u>March</u>
Sales	\$60,000	\$40,000	\$50,000
Purchases	35,000	40,000	75,000
Operating costs	25,000	25,000	25,000

All sales are made on credit and are collected in the second month following the sale. Purchases are paid in the month following the purchase, while operating costs are paid in the month that they are incurred. How much will Mountain Mule need to borrow at the end of the quarter if the company needs to maintain a minimum cash balance of \$5,000 as required by a loan covenant agreement?

- a. \$0.
- b. \$5,000.
- c. \$10,000.
- d. \$45,000.

## Section B: Performance Management

85. CSO: 1B1a LOS: 1B1d

A major **disadvantage** of a static budget is that

- a. it is more difficult to develop than a flexible budget.
- b. it is made for only one level of activity.
- c. variances tend to be smaller than when flexible budgeting is used.
- d. variances are more difficult to compute than when flexible budgeting is used.

86. CSO: 1B1a LOS: 1B1d

Arkin Co.'s controller has prepared a flexible budget for the year just ended, adjusting the original static budget for the unexpected large increase in the volume of sales. Arkin's costs are mostly variable. The controller is pleased to note that both actual revenues and actual costs approximated amounts shown on the flexible budget. If actual revenues and actual costs are compared with amounts shown on the original (static) budget, what variances would arise?

- a. Both revenue variances and cost variances would be favorable.
- b. Revenue variances would be favorable and cost variances would be unfavorable.
- c. Revenue variances would be unfavorable and cost variances would be favorable.
- d. Both revenue variances and cost variances would be unfavorable.

87. CSO: 1B1b LOS: 1B1d

Use of a standard cost system can include all of the following advantages **except** that it

- a. assists in performance evaluation.
- b. emphasizes qualitative characteristics.
- c. permits development of flexible budgeting.
- d. allows employees to better understand what is expected of them.

88. CSO: 1B1b LOS: 1B1e

Which one of the following statements is **correct** concerning a flexible budget cost formula? Variable costs are stated

- a. per unit and fixed costs are stated in total.
- b. in total and fixed costs are stated per unit.
- c. in total and fixed costs are stated in total.
- d. per unit and fixed costs are stated per unit.

89. CSO: 1B1b LOS: 1B1e

The monthly sales volume of Shugart Corporation varies from 7,000 units to 9,800 units over the course of a year. Management is currently studying anticipated selling expenses along with the related cash resources that will be needed. Which of the following types of budgets (1) should be used by Shugart in planning, and (2) will provide Shugart the **best** feedback in performance reports for comparing planned expenditures with actual amounts?

	<u>Planning</u>	<u>Performance Reporting</u>
a.	Static	Static.
b.	Static	Flexible.
c.	Flexible	Static.
d.	Flexible	Flexible.

90. CSO: 1B1b LOS: 1B1f

The following performance report was prepared for Dale Manufacturing for the month of April.

	<u>Actual Results</u>	<u>Static Budget</u>	<u>Variance</u>
Sales units	<u>100,000</u>	<u>80,000</u>	<u>20,000F</u>
Sales dollars	\$190,000	\$160,000	\$30,000F
Variable costs	125,000	96,000	29,000U
Fixed costs	<u>45,000</u>	<u>40,000</u>	<u>5,000U</u>
Operating income	<u>\$ 20,000</u>	<u>\$ 24,000</u>	<u>\$ 4,000U</u>

Using a flexible budget, Dale's total sales-volume variance is

- a. \$4,000 unfavorable.
- b. \$6,000 favorable.
- c. \$16,000 favorable.
- d. \$20,000 unfavorable.

91. CSO: 1B1b LOS: 1B1h

Of the following pairs of variances found in a flexible budget report, which pair is **most likely** to be related?

- a. Material price variance and variable overhead efficiency variance.
- b. Labor rate variance and variable overhead efficiency variance.
- c. Material usage variance and labor efficiency variance.
- d. Labor efficiency variance and fixed overhead volume variance.

92. *CSO: 1B1b LOS: 1B1e*  
An advantage of using a flexible budget compared to a static budget is that in a flexible budget
- shortfalls in planned production are clearly presented.
  - standards can easily be changed to adjust to changing circumstances.
  - fixed cost variances are more clearly presented.
  - budgeted costs for a given output level can be compared with actual costs for the same level of output.
93. *CSO: 1B1c LOS: 1B1i*  
The benefits of management by exception reporting include all of the following **except** a reduction in
- reports production costs.
  - information overload.
  - reliance on advance planning.
  - unfocused management actions.
94. *CSO: 1B1d LOS: 1B1j*  
Lee manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of June included 10,000 hours of direct labor at \$15 per hour, \$150,000. During June, 4,500 units were produced, using 9,600 direct labor hours, incurring \$39,360 of variable overhead, and showing a variable overhead efficiency variance of \$2,400 unfavorable. The standard variable overhead rate per direct labor hour was
- \$3.85.
  - \$4.00.
  - \$4.10.
  - \$6.00.
95. *CSO: 1B1d LOS: 1B1k*  
MinnOil performs oil changes and other minor maintenance services (e.g., tire pressure checks) for cars. The company advertises that all services are completed within 15 minutes for each service. On a recent Saturday, 160 cars were serviced resulting in the following labor variances: rate, \$19 unfavorable; efficiency, \$14 favorable. If MinnOil's standard labor rate is \$7 per hour, determine the actual wage rate per hour and the actual hours worked.
- |    | <u>Wage Rate</u> | <u>Hours Worked</u> |
|----|------------------|---------------------|
| a. | \$6.55           | 42.00.              |
| b. | \$6.67           | 42.71.              |
| c. | \$7.45           | 42.00.              |
| d. | \$7.50           | 38.00.              |

96. CSO: 1B1e LOS: 1B1l

A company applies variable overhead based upon direct labor hours and has a variable overhead efficiency variance that is \$25,000 favorable. A possible cause of this variance is that

- a. higher skilled labor was used.
- b. electricity rates were lower than expected.
- c. less supplies were used than anticipated.
- d. less units of finished goods were produced.

97. CSO: 1B1e LOS: 1B1t

A company has a raw material price variance that is unfavorable. An analysis of this variance indicates that the company's only available supplier of one of its raw materials unexpectedly raised the price of the material. The action management should take regarding this situation should be to

- a. negatively evaluate the performance of the purchasing manager.
- b. negatively evaluate the performance of the production manager.
- c. change the raw material price standard.
- d. ask the production manager to lower the material usage standard to compensate for higher material costs.

98. CSO: 1B1e LOS: 1B1t

The following information is from the accounting records of St. Charles Enterprises.

	Static	
	<u>Budget</u>	<u>Actual</u>
Sales volume (units)	<u>82,000</u>	<u>75,000</u>
Selling price/unit	\$ 15.00	\$ 15.00
Variable cost/unit	9.00	9.25
Fixed cost	280,000	285,000

A staff assistant performed a comparison of budget and actual data, and calculated an unfavorable operating income variance of \$65,750. The assistant concluded that performance did not meet expectations because there was an unfavorable variance in operating income. Which one of the following is the **best** evaluation of this preliminary conclusion?

- a. Both the conclusion and the variance calculation are correct.
- b. The conclusion is incorrect, but the variance calculation is informative.
- c. The conclusion is correct, but the variance calculation could be more informative.
- d. Both the conclusion and the variance calculation are incorrect.

99. CSO: 1B1e LOS: 1B1t

For a given time period, a company had a favorable material quantity variance, a favorable direct labor efficiency variance, and a favorable fixed overhead volume variance. Of the following, the one factor that could **not** have caused all three variances is

- a. the purchase of higher quality materials.
- b. the use of lower-skilled workers.
- c. the purchase of more efficient machinery.
- d. an increase in production supervision.

100. CSO: 1B1e LOS: 1B1a

Marten Company has a cost-benefit policy to investigate any variance that is greater than \$1,000 or 10% of budget, whichever is larger. Actual results for the previous month indicate the following.

	<u>Budget</u>	<u>Actual</u>
Raw material	\$100,000	\$89,000
Direct labor	50,000	54,000

The company should investigate

- a. neither the material variance nor the labor variance.
- b. the material variance only.
- c. the labor variance only.
- d. both the material variance and the labor variance.

101. CSO: 1B1e LOS: 1B1t

A company has a direct labor price variance that is favorable. Of the following, the **most** serious concern the company may have about this variance is that

- a. the circumstances giving rise to the favorable variance will not continue in the future.
- b. the production manager may not be using human resources as efficiently as possible.
- c. the cause of the favorable variance may result in other larger unfavorable variances in the value-chain.
- d. actual production is less than budgeted production.

102. *CSO: 1B1e LOS: 1B1k*

Frisco Company recently purchased 108,000 units of raw material for \$583,200. Three units of raw materials are budgeted for use in each finished good manufactured, with the raw material standard set at \$16.50 for each completed product. Frisco manufactured 32,700 finished units during the period just ended and used 99,200 units of raw material. If management is concerned about the timely reporting of variances in an effort to improve cost control and bottom-line performance, the materials purchase price variance should be reported as

- a. \$6,050 unfavorable.
- b. \$9,920 favorable.
- c. \$10,800 unfavorable.
- d. \$10,800 favorable.

103. *CSO: 1B1e LOS: 1B1k*

Christopher Akers is the chief executive officer of SBL Inc., a masonry contractor. The financial statements have just arrived showing a \$3,000 loss on the new stadium job that was budgeted to show a \$6,000 profit. Actual and budget information relating to the materials for the job are as follows.

	<u>Actual</u>	<u>Budget</u>
Bricks - number of bundles	3,000	2,850
Bricks - cost per bundle	\$7.90	\$8.00

Which one of the following is a **correct** statement regarding the stadium job for SBL?

- a. The price variance was favorable by \$285.
- b. The price variance was favorable by \$300.
- c. The efficiency variance was unfavorable by \$1,185.
- d. The flexible budget variance was unfavorable by \$900.

104. *CSO: 1B1e LOS: 1B1k*

A company isolates its raw material price variance in order to provide the earliest possible information to the manager responsible for the variance. The budgeted amount of material usage for the year was computed as follows.

$$150,000 \text{ units of finished goods} \times 3 \text{ pounds/unit} \times \$2.00/\text{pound} = \$900,000.$$

Actual results for the year were the following.

Finished goods produced	160,000 units
Raw materials purchased	500,000 pounds
Raw materials used	490,000 pounds
Cost per pound	\$2.02



The raw material price variance for the year was

- a. \$9,600 unfavorable.
- b. \$9,800 unfavorable.
- c. \$10,000 unfavorable.
- d. \$20,000 unfavorable.

105. *CSO: 1B1e LOS: 1B1l*

Lee Manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of May included the following information.

Direct labor (10,000 hours at \$15 per hour)	\$150,000
Variable overhead	30,000
Fixed overhead	80,000

During May, 6,000 units were produced and the direct labor efficiency variance was \$1,500 unfavorable. Based on this information, the actual number of direct labor hours used in May was

- a. 9,900 hours.
- b. 10,100 hours.
- c. 11,900 hours.
- d. 12,100 hours.

106. *CSO: 1B1e LOS: 1B1k*

At the beginning of the year, Douglas Company prepared the following monthly budget for direct materials.

<u>Units produced and sold</u>	<u>10,000</u>	<u>15,000</u>
Direct material	\$15,000	\$22,500

At the end of the month, the company's records showed that 12,000 units were produced and sold and \$20,000 was spent for direct materials. The variance for direct materials is

- a. \$2,000 favorable.
- b. \$2,000 unfavorable.
- c. \$5,000 favorable.
- d. \$5,000 unfavorable.

107. *CSO: 1B1e LOS: 1B1k*  
Randall Company uses standard costing and flexible budgeting and is evaluating its direct labor. The total budget variance can usually be broken down into two other variances identified as the
- a. direct labor rate variance and direct labor efficiency variance.
  - b. direct labor cost variance and the direct labor volume variance.
  - c. direct labor rate variance and direct labor volume variance.
  - d. direct labor cost variance and direct labor efficiency variance.
108. *CSO: 1B1e LOS: 1B1k*  
Richter Company has an unfavorable materials efficiency (usage) variance for a particular month. Which one of the following is **least** likely to be the cause of this variance?
- a. Inadequate training of the direct labor employees.
  - b. Poor performance of the shipping employees.
  - c. Poor design of the production process or product.
  - d. Poor quality of the raw materials.
109. *CSO: 1B1e LOS: 1B1k*  
A company had a total labor variance of \$15,000 favorable and a labor efficiency variance of \$18,000 unfavorable. The labor price variance was
- a. \$3,000 favorable.
  - b. \$3,000 unfavorable.
  - c. \$33,000 favorable.
  - d. \$33,000 unfavorable.
110. *CSO: 1B1e LOS: 1B1s*  
Cordell Company uses a standard cost system. On January 1 of the current year, Cordell budgeted fixed manufacturing overhead cost of \$600,000 and production at 200,000 units. During the year, the firm produced 190,000 units and incurred fixed manufacturing overhead of \$595,000. The production volume variance for the year was
- a. \$5,000 unfavorable.
  - b. \$10,000 unfavorable.
  - c. \$25,000 unfavorable.
  - d. \$30,000 unfavorable.

111. CSO: 1B1e LOS: 1B1s

Highlight Inc. uses a standard cost system and applies factory overhead to products on the basis of direct labor hours. If the firm recently reported a favorable direct labor efficiency variance, then the

- a. variable overhead spending variance must be favorable.
- b. variable overhead efficiency variance must be favorable.
- c. fixed overhead volume variance must be unfavorable.
- d. direct labor rate variance must be unfavorable.

112. CSO: 1B1e LOS: 1B1s

Harper Company's performance report indicated the following information for the past month.

Actual total overhead	\$1,600,000
Budgeted fixed overhead	1,500,000
Applied fixed overhead at \$3 per labor hour	1,200,000
Applied variable overhead at \$.50 per labor hour	200,000
Actual labor hours	430,000

Harper's total overhead spending variance for the month was

- a. \$100,000 favorable.
- b. \$115,000 favorable.
- c. \$185,000 unfavorable.
- d. \$200,000 unfavorable.

113. CSO: 1B1e LOS: 1B1s

The JoyT Company manufactures Maxi Dolls for sale in toy stores. In planning for this year, JoyT estimated variable factory overhead of \$600,000 and fixed factory overhead of \$400,000. JoyT uses a standard costing system, and factory overhead is allocated to units produced on the basis of standard direct labor hours. The denominator level of activity budgeted for this year was 10,000 direct labor hours, and JoyT used 10,300 actual direct labor hours.

Based on the output accomplished during this year, 9,900 standard direct labor hours should have been used. Actual variable factory overhead was \$596,000, and actual fixed factory overhead was \$410,000 for the year. Based on this information, the variable overhead spending variance for JoyT for this year was

- a. \$24,000 unfavorable.
- b. \$2,000 unfavorable.
- c. \$4,000 favorable.
- d. \$22,000 favorable.

114. *CSO: 1B1e LOS: 1B1s*

A company has a fixed overhead volume variance that is \$10,000 unfavorable. The **most** likely cause for this variance is that

- a. the production supervisory salaries were greater than planned.
- b. the production supervisory salaries were less than planned.
- c. more was produced than planned.
- d. less was produced than planned.

115. *CSO: 1B1e LOS: 1B1s*

When using a flexible budgeting system, the computation for the variable overhead spending variance is the difference between

- a. actual variable overhead and the previously budgeted amount.
- b. the previously budgeted amount and actual inputs times the budgeted rate.
- c. the amount applied to work-in-process and actual variable overhead.
- d. actual variable overhead and actual inputs times the budgeted rate.

116. *CSO: 1B1e LOS: 1B1t*

Fortune Corporation's Marketing Department recently accepted a rush order for a nonstock item from a valued customer. The Marketing Department filed the necessary paperwork with the Production Department, which complained greatly about the lack of time to do the job the right way. Nevertheless, the Production Department accepted the manufacturing commitment and filed the required paperwork with the Purchasing Department for the needed raw materials. A purchasing clerk temporarily misplaced the paperwork. By the time the paperwork was found, it was too late to order from the company's regular supplier. A new supplier was located, and that vendor quoted a very attractive price. The materials arrived and were rushed into production, bypassing the normal inspection processes (as directed by the Production Department supervisor) to make up for lost time. Unfortunately, the goods were of low quality and created considerable difficulty for Fortune's assembly-line personnel. Which of the following **best** indicates the responsibility for the materials usage variance in this situation?

- a. Purchasing.
- b. Purchasing and Marketing.
- c. Marketing and Production.
- d. Purchasing, Marketing, and Production.

117. *CSO: 1B1e LOS: 1B1t*

Johnson Inc. has established per unit standards for material and labor for its production department based on 900 units normal production capacity as shown below.

3 lbs. of direct materials @ \$4 per lb.	\$12
1 direct labor hour @ \$15 per hour	<u>15</u>
Standard cost per unit	<u>\$27</u>

During the year 1,000 units were produced. The accounting department has charged the production department supervisor with the following unfavorable variances.

<u>Materials Quantity Variance</u>		<u>Material Price Variance</u>	
Actual usage	3,300 lbs.	Actual cost	\$12,600
Standard usage	3,000 lbs.	Standard cost	12,000
Unfavorable	300 lbs.	Unfavorable	\$600

Bob Sterling, the production supervisor, has received a memorandum from his boss stating that he did not meet the established standards for material prices and quantity and corrective action should be taken. Sterling is very unhappy about the situation and is preparing to reply to the memorandum explaining the reasons for his dissatisfaction. All of the following are valid reasons for Sterling's dissatisfaction **except** that the

- material price variance is the responsibility of the purchasing department.
- cause of the unfavorable material usage variance was the acquisition of substandard material.
- standards have not been adjusted to the engineering changes.
- variance calculations fail to properly reflect that actual production exceeded normal production capacity.

118. *CSO: 1B1e LOS: 1B1t*

During the month of May, Tyler Company experienced a significant unfavorable material efficiency variance in the production of its single product at one of Tyler's plants. Which one of the following reasons would be **least** likely to explain why the unfavorable variance arose?

- Inferior materials were purchased.
- Actual production was lower than planned production.
- Workers used were less-skilled than expected.
- Replacement production equipment had just been installed.

119. CSO: 1B2a LOS: 1B2a

Sara Bellows, manager of the telecommunication sales team, has the following department budget.

Billings - long distance	\$350,000
Billings - phone card	75,000
Billings - toll free	265,000

Her responsibility center is **best** described as a

- a. cost center.
- b. revenue center.
- c. profit center.
- d. investment center.

120. CSO: 1B2a LOS: 1B2b

The production manager of the Super T-shirt Company is responsible for the activity of her department and the costs associated with production. Super T adheres to a responsibility centered budget process, and the manager's performance is measured by how well she performs to budget. Recently, the dark horse team won the local college basketball tournament. As a result, the sales department, which operates as a profit center, received an order for 10,000 t-shirts, but only if they could be delivered in three days. The production manager said she could meet the schedule, but only by incurring overtime pay that would cause her to be over budget for hourly wages paid. What would be the **best** course of action for the sales department and the production manager to undertake in this case?

- a. Accept the order and overrun the production manager's budget.
- b. Refuse the overtime and produce only what the production department is capable of while staying within the budget.
- c. Accept the order and ignore the effect on the production department budget when conducting the performance review.
- d. Charge the overtime to the sales department's budget.

121. CSO: 1B2a LOS: 1B2f

Most firms allocate corporate and other support costs to divisions and departments for all of the following reasons **except** to

- a. remind profit-center managers that earnings must be adequate to cover some share of the indirect costs.
- b. stimulate profit-center managers to put pressure on central managers to control service costs.
- c. create competition between divisions and departments, and their managers.
- d. fix accountability and evaluate profit centers.

122. CSO: 1B2a LOS: 1B2f

Which one of the following allocation approaches will ensure that the production departments do not underestimate their planned usage of service at the start of the budget period as well as make the service departments cost efficient?

- a. The use of actual rates and actual hours for both fixed and variable costs.
- b. Budgeted rates and standard hours allowed for output attained for variable costs and budgeted rates and capacity available for fixed costs.
- c. The use of rates and quantities based on long-term historical averages for both variable and fixed costs.
- d. The use of a budgeted lump-sum amount based on estimates provided by the production departments for both variable and fixed costs.

123. CSO: 1B2b LOS: 1B2h

Which one of the following is an **incorrect** description of transfer pricing?

- a. It measures the value of goods or services furnished by a profit center to other responsibility centers within a company.
- b. If a market price exists, this price may be used as a transfer price.
- c. It measures exchanges between a company and external customers.
- d. If no market price exists, the transfer price may be based on cost.

124. CSO: 1B2b LOS: 1B2i

Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10

Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm. The **best** process to determine the price ultimately charged by the Fabrication Division to the Assembly Division for the circuit board is to

- a. establish the price by top management.
- b. establish the price by an arbitration committee.
- c. establish the price through negotiations between the Fabrication's and Electronic Assembly's Division management.
- d. set the price equal to the price that would be charged if the Fabrication Department had no excess capacity.

125. *CSO: 1B2b LOS: 1B2i*  
 Happy Time Industries uses segment reporting for all of its decentralized divisions. It has several products that are transferred from one division to other divisions. Happy Time wants to motivate the manager of the selling division to produce efficiently. Assuming the following methods are available, the **optimal** transfer pricing method should be a
- cost-based transfer price that uses actual amounts.
  - cost-based transfer price that uses budgeted amounts.
  - variable cost-based transfer price that uses actual amounts.
  - market-based transfer price.
126. *CSO: 1B2b LOS: 1B2k*  
 Morrison's Plastics Division, a profit center, sells its products to external customers as well as to other internal profit centers. Which one of the following circumstances would justify the Plastics Division selling a product internally to another profit center at a price that is below the market-based transfer price?
- The buying unit has excess capacity.
  - The selling unit is operating at full capacity.
  - Routine sales commissions and collection costs would be avoided.
  - The profit centers' managers are evaluated on the basis of unit operating income.
127. *CSO: 1B2b LOS: 1B2i*  
 With respect to a firm's transfer pricing policy, an advantage of using a dual pricing arrangement is that it
- provides an incentive for the supplying subunit to control costs.
  - exposes the supplying subunit to the discipline of market prices.
  - promotes goal congruence between the supplying and buying subunits of the firm.
  - simplifies tax calculations when the buying and supplying subunits are taxed in different jurisdictions.
128. *CSO: 1B2b LOS: 1B2j*  
 Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10



Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm. To optimize the overall goals of Manhattan, the minimum price to be charged for the board from the Fabrication Division to the Electronic Assembly Division should be

- a. \$21.
- b. \$26.
- c. \$31.
- d. \$46.

129. *CSO: 1B2b LOS: 1B2k*

Kern Manufacturing has several divisions and evaluates performance using segment income. Since sales include transfers to other divisions, Kern has established a price for internal sales as cost plus 10%. Red Division has requested 10,000 units of Green Division's product. Green Division is selling its product externally at a 60% markup over cost. The corporate policy will encourage the Green Division to

- a. transfer the product to the Red Division because all costs are being covered and the division will earn a 10% profit.
- b. reject the sale to the Red Division because it does not provide the same markup as external sales.
- c. accept the sale to the Red Division if it is operating at full capacity and the sale will contribute to fixed costs.
- d. transfer the product to the Red Division if it does not require the Green Division to give up any external sales.

130. *CSO: 1B3b LOS: 1B3r*

Consider the following categories of performance measures.

- I. Profitability measures.
- II. Customer-satisfaction measures.
- III. Efficiency, quality, and time measures.
- IV. Innovation measures.

A cruise line operates on a national scale in a very competitive marketplace. In view of this information, which measures should the company use in the evaluation of its managers?

- a. I only.
- b. I and II.
- c. II and III.
- d. I, II, III, and IV.

131. *CSO: 1B3b LOS: 1B3a*  
All of the following are considered appropriate goals for measuring a division manager's efficiency for a budgeting period **except**
- budgeted operating income.
  - a targeted share of the market.
  - earnings per share projections.
  - a reduction in the organizational structure (fewer employees doing a given amount of work).
132. *CSO: 1B3b LOS: 1B3a*  
David Burke is manager of claims processing for Continental Health Care System. His performance is evaluated using various measures agreed upon in advance with Diane Lewis, general manager. Lewis asked Burke to recommend several measures to evaluate the performance of his unit next year. Which one of the following performance measures would likely have the **least** positive effect on Burke's motivation and performance?
- Processing cost per claim.
  - Average processing time per claim.
  - Percentage of claims processed accurately the first time.
  - Total dollar amount of claims processed per month.
133. *CSO: 1B3b LOS: 1B3a*  
Paul Cooper, shipping manager for DFG Distributors, is responsible for managing the staff and all related transportation equipment to fill orders for bakery products from local retailers and deliver the products to those retailers. Which one of the following groups of three performance measures **most** likely would result in the highest level of goal congruence?
- Labor cost per order; transportation cost per order; number of orders completed per day.
  - The percentage of orders filled on time; the percentage of orders filled accurately; average cost to fill and deliver an order.
  - Customer satisfaction; elapsed time to complete an order; percentage of orders filled accurately.
  - Orders completed per employee per day; employee injuries per hour worked; number of vehicle accidents per year.
134. *CSO: 1B3b LOS: 1B3a*  
P.C. Programs Inc. produces software for individual users and small businesses. Rita Morgan manages the customer hot line department for the firm and is responsible for answering customer questions related to software products produced by all divisions of the firm. For purposes of promoting goal congruence, which one of the following would be the **least** appropriate measure of her performance?

- a. Average time to provide an answer or solution to a customer.
- b. Number of calls to the hot line for each new release of software.
- c. Average time a customer is on hold.
- d. Number of customer complaints due to incorrect responses given to customers.

135. *CSO: 1B3b LOS: 1B3a*

Which one of the following should be used for evaluating the performance of the Repair and Maintenance Department that repairs production equipment in a firm devoted to making keyboards for computers?

- a. The variance between the firm's budgeted and actual net income.
- b. The total factory overhead variances.
- c. The fixed overhead volume variances.
- d. The response time and degree of satisfaction among the production departments.

136. *CSO: 1B3b LOS: 1B3a*

Albert Hathaway recently joined Brannen University as the chief information officer of the University Computing Services Department. His assigned task is to help reduce the recurrent problem of cost overruns due to uncontrolled computer usage by the user community, while at the same time not curtailing the use of information technology for research and teaching. To ensure goal congruence, which one of the following algorithms should be used to allocate the cost of the University Computing Services Department to other departments within the university?

- a. Actual rate times actual hours of computer usage.
- b. Actual rate times budgeted hours of computer usage.
- c. Budgeted rate times actual hours of computer usage.
- d. Budgeted rate times budgeted hours of computer usage.

137. *CSO: 1B3d LOS: 1B3i*

For several years, Northern Division of Marino Company has maintained a positive residual income. Northern is currently considering investing in a new project that will lower the division's overall return on investment (ROI) but increase its residual income. What is the relationship between the expected rate of return on the new project, the firm's cost of capital, and the division's current ROI?

- a. The expected rate of return on the new project is higher than the division's current return on investment, but lower than the firm's cost of capital.
- b. The firm's cost of capital is higher than the expected rate of return on the new project, but lower than the division's current return on investment.
- c. The division's current return on investment is higher than the expected rate of return on the new project, but lower than the firm's cost of capital.
- d. The expected rate of return on the new project is higher than the firm's cost of capital, but lower than the division's current return on investment.

138. CSO: 1B3d LOS: 1B3f

KHD Industries is a multidivisional firm that evaluates its managers based on the return on investment (ROI) earned by their divisions. The evaluation and compensation plans use a targeted ROI of 15% (equal to the cost of capital) and managers receive a bonus of 5% of basic compensation for every one-percentage point that the division's ROI exceeds 15%. David Evans, manager of the Consumer Products Division, has made a forecast of the division's operations and finances for next year that indicates the ROI would be 24%. In addition, new short-term programs were identified by the Consumer Products Division and evaluated by the finance staff as follows.

<u>Program</u>	<u>Projected ROI</u>
A	13%
B	19%
C	22%
D	31%

Assuming no restrictions on expenditures, what is the optimal mix of new programs that would add value to KHD Industries?

- a. A, B, C, and D.
- b. B, C, and D only.
- c. C and D only.
- d. D only.

139. CSO: 1B3d LOS: 1B3f

Performance results for four geographic divisions of a manufacturing company are shown below.

<u>Division</u>	<u>Target Return on Investment</u>	<u>Actual Return on Investment</u>	<u>Return on Sales</u>
A	18%	18.1%	8%
B	16	20.0	8
C	14	15.8	6
D	12	11.0	9

The division with the **best** performance is

- a. Division A.
- b. Division B.
- c. Division C.
- d. Division D.

140. *CSO: 1B3d LOS: 1B3f*

Vincent Hospital has installed a new computer system. The system was designed and constructed based on the anticipated number of hours of usage required by the various hospital departments according to projections made by the departmental managers. Virtually all of the operating costs of the system are fixed. What would be the **most** systematic and rational manner in which to allocate the new computer system costs to the various hospital departments?

- a. To each department equally.
- b. By the anticipated number of hours of usage.
- c. By actual usage by each department.
- d. By the revenue generated in each department.

141. *CSO: 1B3d LOS: 1B3i*

Oakmont Company has two divisions, Household Appliances and Construction Equipment. The manager of the Household Appliances Division is evaluated on the basis of return on investment (ROI). The manager of the Construction Equipment Division is evaluated on the basis of residual income. The cost of capital has been 12% and the return on investment has been 16% for the two divisions. Each manager is currently considering a project with a 14% rate of return. According to the current evaluation system for managers, which manager(s) would have incentive to undertake the project?

- a. Both managers would have incentive to undertake the project.
- b. Neither manager would have incentive to undertake the project.
- c. The manager of the Household Appliances Division would have incentive to undertake the project while the manager of the Construction Equipment Division would not have incentive to undertake the project.
- d. The manager of the Construction Equipment Division would have incentive to undertake the project while the manager of the Household Appliances Division would not have incentive to undertake the project.

142. *CSO: 1B3e LOS: 1B3g*

A company is concerned that its divisional managers are not making decisions that are in the **best** interests of the overall corporation. In order to prevent this, the company should use a performance evaluation system that focuses on

- a. flexible budget variances.
- b. operating income.
- c. controllable costs.
- d. residual income.

143. CSO: 1B3h LOS: 1B3m

To insure that a divisional vice president places appropriate focus on both the short-term and the long-term objectives of the division, the **best** approach would be to evaluate the vice president's performance by using

- a. return on investment (ROI) which permits easy and quick comparisons to other similar divisions.
- b. residual income since it will eliminate the rejection of capital investments that have a return less than ROI but greater than the cost of capital.
- c. division segment margin or profit margin.
- d. financial and nonfinancial measures, including the evaluation of quality, customer satisfaction, and market performance.

144. CSO: 1B3i LOS: 1B3n

The balanced scorecard provides an action plan for achieving competitive success by focusing management attention on critical success factors. Which one of the following is **not** one of the competitive success factors commonly focused upon in the balanced scorecard?

- a. Competitor business strategies.
- b. Financial performance measures.
- c. Internal business processes.
- d. Employee innovation and learning.

145. CSO: 1B3i LOS: 1B3n

Which one of the following statements about a balanced scorecard is **incorrect**?

- a. It seeks to address the problems associated with traditional financial measures used to assess performance.
- b. The notion of value chain analysis plays a major role in the drawing up of a balanced scorecard.
- c. It relies on the perception of the users with regard to service provided.
- d. It is directly derived from the scientific management theories.

## Section C: Cost Management

146. CSO: 1C1a LOS: 1C1a

Manchester Airlines is in the process of preparing a contribution margin income statement that will allow a detailed look at its variable costs and profitability of operations. Which one of the following cost combinations should be used to evaluate the variable cost per flight of the company's Boston-Las Vegas flights?

- a. Flight crew salary, fuel, and engine maintenance.
- b. Fuel, food service, and airport landing fees.
- c. Airplane depreciation, baggage handling, and airline marketing.
- d. Communication system operation, food service, and ramp personnel.

147. CSO: 1C1a LOS: 1C1a

Which one of the following items would **not** be considered a manufacturing cost?

- a. Cream for an ice cream maker.
- b. Sales commissions for a car manufacturer.
- c. Plant property taxes for an ice cream maker.
- d. Tires for an automobile manufacturer.

148. CSO: 1C1a LOS: 1C1a

Taylor Corporation is determining the cost behavior of several items in order to budget for the upcoming year. Past trends have indicated the following dollars were spent at three different levels of output.

	Unit Levels		
	10,000	12,000	15,000
Cost A	\$25,000	\$29,000	\$35,000
Cost B	10,000	15,000	15,000
Cost C	15,000	18,000	22,500

In establishing a budget for 14,000 units, Taylor should treat Costs A, B, and C, respectively, as

- a. semivariable, fixed, and variable.
- b. variable, fixed, and variable.
- c. semivariable, semivariable, and semivariable.
- d. variable, semivariable, and semivariable.

149. CSO: 1C1a LOS: 1C1a

Which one of the following refers to a cost that remains the same as the volume of activity decreases within the relevant range?

- a. Average cost per unit.
- b. Variable cost per unit.
- c. Unit fixed cost.
- d. Total variable cost.

150. CSO: 1C1a LOS: 1C1a

Fowler Co. provides the following summary of its total budgeted production costs at three production levels.

	<u>Volume in Units</u>		
	<u>1,000</u>	<u>1,500</u>	<u>2,000</u>
Cost A	\$1,420	\$2,130	\$2,840
Cost B	\$1,550	\$2,200	\$2,900
Cost C	\$1,000	\$1,000	\$1,000
Cost D	\$1,630	\$2,445	\$3,260

The cost behavior of each of the Costs A through D, respectively, is

- a. semi-variable, variable, fixed, and variable.
- b. variable, semi-variable, fixed, and semi-variable.
- c. variable, fixed, fixed, and variable.
- d. variable, semi-variable, fixed, and variable.

151. CSO: 1C1a LOS: 1C1a

Roberta Johnson is the manager of SleepWell Inn, one of a chain of motels located throughout the United States. An example of an operating cost at SleepWell that is semivariable is

- a. the security guard's salary.
- b. electricity.
- c. postage for reservation confirmations.
- d. local yellow pages advertising.



152. *CSO: 1C1a LOS: 1C1b*  
The marketing manager of Ames Company has learned the following about a new product that is being introduced by Ames. Sales of this product are planned at \$100,000 for the first year. Sales commission expense is budgeted at 8% of sales plus the marketing manager's incentive budgeted at an additional ½%. The preparation of a product brochure will require 20 hours of marketing salaried staff time at an average rate of \$100 per hour, and 10 hours, at \$150 per hour, for an outside illustrator's effort. The variable marketing cost for this new product will be
- a. \$8,000.
  - b. \$8,500.
  - c. \$10,000.
  - d. \$10,500.
153. *CSO: 1C1a LOS: 1C1c*  
Indirect and common costs often make up a significant portion of the cost of a product. All of the following are reasons for indirect cost allocation to cost objects **except** to
- a. reduce total costs identified with products.
  - b. measure income and assets for external reporting purposes.
  - c. justify costs for reimbursement purposes.
  - d. provide information for economic decision making.
154. *CSO: 1C1a LOS: 1C1a*  
The relevant range refers to the activity levels over which
- a. cost relationships hold constant.
  - b. costs fluctuate.
  - c. production varies.
  - d. relevant costs are incurred.
155. *CSO: 1C1a LOS: 1C1a*  
Cell Company has discovered that the cost of processing customer invoices is strictly variable within the relevant range. Which one of the following statements concerning the cost of processing customer invoices is **incorrect**?
- a. The total cost of processing customer invoices will increase as the volume of customer invoices increases.
  - b. The cost per unit for processing customer invoices will decline as the volume of customer invoices increases.
  - c. The cost of processing the 100th customer invoice will be the same as the cost of processing the first customer invoice.
  - d. The average cost per unit for processing a customer invoice will equal the incremental cost of processing one more customer invoice.

156. CSO: 1C1a LOS: 1C1a

When identifying fixed and variable costs, which one of the following is a typical assumption concerning cost behavior?

- a. General and administrative costs are assumed to be variable costs.
- b. Cost behavior is assumed to be realistic for all levels of activity from zero to maximum capacity.
- c. Total costs are assumed to be linear when plotted on a graph.
- d. The relevant time period is assumed to be five years.

157. CSO: 1C1a LOS: 1C1a

Lar Company has found that its total electricity cost has both a fixed component and a variable component within the relevant range. The variable component seems to vary directly with the number of units produced. Which one of the following statements concerning Lar's electricity cost is **incorrect**?

- a. The total electricity cost will increase as production volume increases.
- b. The total electricity cost per unit of production will increase as production volume increases.
- c. The variable electricity cost per unit of production will remain constant as production volume increases.
- d. The fixed electricity cost per unit of production will decline as production volume increases.

158. CSO: 1C1b LOS: 1C1e

Kimber Company has the following unit cost for the current year.

Raw material	\$20.00
Direct labor	25.00
Variable manufacturing overhead	10.00
Fixed manufacturing overhead	<u>15.00</u>
Total unit cost	<u>\$70.00</u>

Fixed manufacturing cost is based on an annual activity level of 8,000 units. Based on these data, the total manufacturing cost expected to be incurred to manufacture 9,000 units in the current year is

- a. \$560,000.
- b. \$575,000.
- c. \$615,000.
- d. \$630,000.

159. CSO: 1C1b LOS: 1C1a

A review of Plunkett Corporation's accounting records for last year disclosed the following selected information.

Variable costs	
Direct materials used	\$ 56,000
Direct labor	179,100
Manufacturing overhead	154,000
Selling costs	108,400
Fixed costs	
Manufacturing overhead	267,000
Selling costs	121,000
Administrative costs	235,900

In addition, the company suffered a \$27,700 uninsured factory fire loss during the year. What were Plunkett's product costs and period costs for last year?

	<u>Product</u>	<u>Period</u>
a.	\$235,100	\$914,000.
b.	\$497,500	\$651,600.
c.	\$656,100	\$493,000.
d.	\$683,800	\$465,300.

160. CSO: 1C1b LOS: 1C1e

Normal costing systems are said to offer a user several distinct benefits when compared with actual costing systems. Which one of the following is **not** a benefit associated with normal costing systems?

- a. More timely costing of jobs and products.
- b. A smoothing of product costs throughout the period.
- c. Improved accuracy of job and product costing.
- d. A more economical way of attaching overhead to a job or product.

161. CSO: 1C1b LOS: 1C1e

From the following budgeted data, calculate the budgeted indirect cost rate that would be used in a normal costing system.

Total direct labor hours	250,000
Direct costs	\$10,000,000
Total indirect labor hours	50,000
Total indirect-labor-related costs	\$ 5,000,000
Total indirect non-labor related costs	\$ 7,000,000

- a. \$20.
- b. \$28.
- c. \$40.
- d. \$48.

162. CSO: 1C1c LOS: 1C1e

Merlene Company uses a standard cost accounting system. Data for the last fiscal year are as follows.

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50

	<u>Per Unit</u>
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*

Budgeted selling and administrative costs (all fixed) \$45,000

\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

The amount of operating income earned by Merlene for the last fiscal year using variable costing was

- a. \$21,500.
- b. \$22,500.
- c. \$28,000.
- d. \$31,000.

163. CSO: 1C1c LOS: 1C1e

Loyal Co. produces three types of men's undershirts: T-shirts, V-neck shirts, and athletic shirts. In the Folding and Packaging Department, operations costing is used to apply costs to individual units, based on the standard time allowed to fold and package each type of undershirt. The standard time to fold and package each type of undershirt is as follows.

T-shirt	40 seconds per shirt
V-neck shirt	40 seconds per shirt
Athletic shirt	20 seconds per shirt

During the month of April, Loyal produced and sold 50,000 T-shirts, 30,000 V-neck shirts, and 20,000 athletic shirts. If costs in the Folding and Packaging Department were \$78,200 during April, how much folding and packaging cost should be applied to each T-shirt?

- a. \$.52134.
- b. \$.6256.
- c. \$.7820.
- d. \$.8689.

164. *CSO: 1C1d LOS: 1C1g*

Dremmon Corporation uses a standard cost accounting system. Data for the last fiscal year are as follows.

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50
 <u>Per Unit</u>	
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*

Budgeted selling and administrative costs (all fixed) \$45,000

\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

Assuming that Dremmon used absorption costing, the amount of operating income earned in the last fiscal year was

- a. \$21,500.
- b. \$27,000.
- c. \$28,000.
- d. \$30,000.

165. CSO: 1C1d LOS: 1C1g

Chassen Company, a cracker and cookie manufacturer, has the following unit costs for the month of June.

<u>Variable manufacturing cost</u>	<u>Variable marketing cost</u>	<u>Fixed manufacturing cost</u>	<u>Fixed marketing cost</u>
\$5.00	\$3.50	\$2.00	\$4.00

A total of 100,000 units were manufactured during June of which 10,000 remain in ending inventory. Chassen uses the first-in, first-out (FIFO) inventory method, and the 10,000 units are the only finished goods inventory at month-end. Using the full absorption costing method, Chassen's finished goods inventory value would be

- a. \$50,000.
- b. \$70,000.
- c. \$85,000.
- d. \$145,000.

166. CSO: 1C1d LOS: 1C1g

Consider the following situation for Weisman Corporation for the prior year.

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing costs	10
Fixed manufacturing costs	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

The operating income for Weisman for the prior year using absorption costing was

- a. \$13,600.
- b. \$14,200.
- c. \$15,300.
- d. \$15,840.

167. CSO: 1C1d LOS: 1C1f

When comparing absorption costing with variable costing, the difference in operating income can be explained by the difference between the

- units sold and the units produced, multiplied by the unit sales price.
- ending inventory in units and the beginning inventory in units, multiplied by the budgeted fixed manufacturing cost per unit.
- ending inventory in units and the beginning inventory in units, multiplied by the unit sales price.
- units sold and the units produced, multiplied by the budgeted variable manufacturing cost per unit.

168. CSO: 1C1d LOS: 1C1g

Mill Corporation had the following unit costs for the recently concluded calendar year.

	<u>Variable</u>	<u>Fixed</u>
Manufacturing	\$8.00	\$3.00
Nonmanufacturing	\$2.00	\$5.50

Inventory for Mill's sole product totaled 6,000 units on January 1 and 5,200 units on December 31. When compared to variable costing income, Mill's absorption costing income is

- \$2,400 lower.
- \$2,400 higher.
- \$6,800 lower.
- \$6,800 higher.

169. CSO: 1C1d LOS: 1C1f

Which of the following correctly shows the treatment of (1) factory insurance, (2) direct labor, and (3) finished goods shipping costs under absorption costing and variable costing?

	<u>Absorption Costing</u>		<u>Variable Costing</u>	
	<u>Product Cost</u>	<u>Period Cost</u>	<u>Product Cost</u>	<u>Period Cost</u>
a.	1, 2	3	2	1, 3.
b.	2	1, 3	1, 2	3.
c.	1, 2	3	1	2, 3.
d.	1	2, 3	2, 3	1.

170. CSO: 1C1d LOS: 1C1g

Troughton Company manufactures radio-controlled toy dogs. Summary budget financial data for Troughton for the current year are as follows.

Sales (5,000 units at \$150 each)	\$750,000
Variable manufacturing cost	400,000
Fixed manufacturing cost	100,000
Variable selling and administrative cost	80,000
Fixed selling and administrative cost	150,000

Troughton uses an absorption costing system with overhead applied based on the number of units produced, with a denominator level of activity of 5,000 units. Underapplied or overapplied manufacturing overhead is written off to cost of goods sold in the year incurred. The \$20,000 budgeted operating income from producing and selling 5,000 toy dogs planned for this year is of concern to Trudy George, Troughton's president. She believes she could increase operating income to \$50,000 (her bonus threshold) if Troughton produces more units than it sells, thus building up the finished goods inventory. How much of an increase in the number of units in the finished goods inventory would be needed to generate the \$50,000 budgeted operating income?

- a. 556 units.
- b. 600 units.
- c. 1,500 units.
- d. 7,500 units.

171. CSO: 1C1e LOS: 1C1f

If a manufacturing company uses variable costing to cost inventories, which of the following costs are considered inventoriable costs?

- a. Only raw material, direct labor, and variable manufacturing overhead costs.
- b. Only raw material, direct labor, variable and fixed manufacturing overhead costs.
- c. Only raw material, direct labor, variable manufacturing overhead and variable selling and administrative costs.
- d. Only raw material and direct labor costs.

172. CSO: 1C1e LOS: 1C1f

Xylon Company uses direct (variable) costing for internal reporting and absorption costing for the external financial statements. A review of the firm's internal and external disclosures will likely find

- a. a difference in the treatment of fixed selling and administrative costs.
- b. a higher inventoriable unit cost reported to management than to the shareholders.
- c. a contribution margin rather than gross margin in the reports released to shareholders.
- d. internal income figures that vary closely with sales and external income figures that are influenced by both units sold and productive output.



173. CSO: 1C1e LOS: 1C1g

Bethany Company has just completed the first month of producing a new product but has not yet shipped any of this product. The product incurred variable manufacturing costs of \$5,000,000, fixed manufacturing costs of \$2,000,000, variable marketing costs of \$1,000,000, and fixed marketing costs of \$3,000,000.

If Bethany uses the variable cost method to value inventory, the inventory value of the new product would be

- a. \$5,000,000.
- b. \$6,000,000.
- c. \$8,000,000.
- d. \$11,000,000.

174. CSO: 1C1e LOS: 1C1g

Consider the following situation for Donaldson Company for the prior year.

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing costs	10
Fixed manufacturing costs	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

Assuming that Donaldson uses variable costing, the operating income for the prior year was

- a. \$13,600.
- b. \$14,200.
- c. \$14,800.
- d. \$15,300.

175. CSO: 1C1e LOS: 1C1g

During the month of May, Robinson Corporation sold 1,000 units. The cost per unit for May was as follows.

	<u>Cost Per Unit</u>
Direct materials	\$ 5.50
Direct labor	3.00
Variable manufacturing overhead	1.00
Fixed manufacturing overhead	1.50
Variable administrative costs	.50
Fixed administrative costs	<u>3.50</u>
Total	<u>\$15.00</u>

May's income using absorption costing was \$9,500. The income for May, if variable costing had been used, would have been \$9,125. The number of units Robinson produced during May was

- a. 750 units.
- b. 925 units.
- c. 1,075 units.
- d. 1,250 units.

176. CSO: 1C1e LOS: 1C1f

Which one of the following is the **best** reason for using variable costing?

- a. Fixed factory overhead is more closely related to the capacity to produce than to the production of specific units.
- b. All costs are variable in the long term.
- c. Variable costing is acceptable for income tax reporting purposes.
- d. Variable costing usually results in higher operating income than if a company uses absorption costing.

177. CSO: 1C1e LOS: 1C1f

Dawn Company has significant fixed overhead costs in the manufacturing of its sole product, auto mufflers. For internal reporting purposes, in which one of the following situations would ending finished goods inventory be higher under direct (variable) costing rather than under absorption costing?

- a. If more units were produced than were sold during a given year.
- b. If more units were sold than were produced during a given year.
- c. In all cases when ending finished goods inventory exists.
- d. None of these situations.

178. *CSO: 1C1f LOS: 1C1j*  
The primary purpose for allocating common costs to joint products is to determine
- the selling price of a by-product.
  - whether or not one of the joint products should be discontinued.
  - the variance between budgeted and actual common costs.
  - the inventory cost of joint products for financial reporting.
179. *CSO: 1C1f LOS: 1C1j*  
The distinction between joint products and by-products is largely dependent on
- historical costs.
  - prime costs.
  - market value.
  - salvage value.
180. *CSO: 1C1f LOS: 1C1j*  
In a production process where joint products are produced, the **primary** factor that will distinguish a joint product from a by-product is the
- relative total sales value of the products.
  - relative total volume of the products.
  - relative ease of selling the products.
  - accounting method used to allocate joint costs.
181. *CSO: 1C1f LOS: 1C1l*  
All of the following are methods of allocating joint costs to joint products **except**
- physical quantities method.
  - net realizable value method.
  - separable production cost method.
  - gross market value method.
182. *CSO: 1C1f LOS: 1C1l*  
Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. Big can be processed further into 600 gallons of Giant if \$1,000 of additional processing costs are incurred. Giant can be sold for \$17 per gallon. If the net-realizable-value method were used to allocate costs to the joint products, the total cost of producing Giant would be

- a. \$5,600.
- b. \$5,564.
- c. \$5,520.
- d. \$4,600.

183. *CSO: 1C1f LOS: 1C1I*

Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. If the sales value at splitoff method is used to allocate joint costs to the final products, the per gallon cost (rounded to the nearest cent) of producing Big is

- a. \$5.63 per gallon.
- b. \$5.00 per gallon.
- c. \$4.50 per gallon.
- d. \$3.38 per gallon.

184. *CSO: 1C1f LOS: 1C1I*

Tempo Company produces three products from a joint process. The three products are sold after further processing as there is no market for any of the products at the split-off point. Joint costs per batch are \$315,000. Other product information is shown below.

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>
Units produced per batch	20,000	30,000	50,000
Further processing and marketing cost per unit	\$ .70	\$3.00	\$1.72
Final sales value per unit	5.00	6.00	7.00

If Tempo uses the net realizable value method of allocating joint costs, how much of the joint costs will be allocated to each unit of Product C?

- a. \$2.10.
- b. \$2.65.
- c. \$3.15.
- d. \$3.78.

185. *CSO: 1C1f LOS: 1C1I*

Fitzpatrick Corporation uses a joint manufacturing process in the production of two products, Gummo and Xylo. Each batch in the joint manufacturing process yields 5,000 pounds of an intermediate material, Valdene, at a cost of \$20,000. Each batch of Gummo uses 60% of the Valdene and incurs \$10,000 of separate costs. The resulting 3,000 pounds of Gummo sells for \$10 per pound. The remaining Valdene is used in the production of Xylo which incurs \$12,000 of separable costs per batch. Each batch of

Xylo yields 2,000 pounds and sells for \$12 per pound. Fitzpatrick uses the net realizable value method to allocate the joint material costs. The company is debating whether or not to process Xylo further into a new product, Zinten, which would incur an additional \$4,000 in costs and sell for \$15 per pound. If Zinten is produced, income would increase by

- a. \$2,000.
- b. \$5,760.
- c. \$14,000.
- d. \$26,000.

186. CSO: 1C2a LOS: 1C2c

Darden Manufacturing, a calendar-year corporation, had \$17,000 of spoilage during April that production management characterized as abnormal. The spoilage was incurred on Job No. 532, that was sold three months later for \$459,000. Which of the following correctly describes the impact of the spoilage on Darden's unit manufacturing cost for Job No. 532 and on the year's operating income?

- |    | <u>Unit Manufacturing Cost</u> | <u>Operating Income</u>          |
|----|--------------------------------|----------------------------------|
| a. | Increase.                      | No effect.                       |
| b. | Increase.                      | Decrease.                        |
| c. | No effect.                     | Decrease.                        |
| d. | No effect.                     | Not enough information to judge. |

187. CSO: 1C2a LOS: 1C2b

Baldwin Printing Company uses a job order costing system and applies overhead based on machine hours. A total of 150,000 machine hours have been budgeted for the year. During the year, an order for 1,000 units was completed and incurred the following.

Direct material costs	\$1,000
Direct labor costs	1,500
Actual overhead	1,980
Machine hours	450

The accountant calculated the inventory cost of this order to be \$4.30 per unit. The annual budgeted overhead in dollars was

- a. \$577,500.
- b. \$600,000.
- c. \$645,000.
- d. \$660,000.

188. CSO: 1C2a LOS: 1C2b

John Sheng, cost accountant at Starlet Company, is developing departmental factory overhead application rates for the company's tooling and fabricating departments. The budgeted overhead for each department and the data for one job are shown below.

	<u>Departments</u>	
	<u>Tooling</u>	<u>Fabricating</u>
Supplies	\$ 850	\$ 200
Supervisors' salaries	1,500	2,000
Indirect labor	1,200	4,880
Depreciation	1,000	5,500
Repairs	<u>4,075</u>	<u>3,540</u>
Total budgeted overhead	<u>\$8,625</u>	<u>\$16,120</u>
Total direct labor hours	460	620
Direct labor hours on Job #231	12	3

Using the departmental overhead application rates, total overhead applied to Job #231 in the Tooling and Fabricating Departments will be

- a. \$225.
- b. \$303.
- c. \$537.
- d. \$671.

189. CSO: 1C2b LOS: 1C2b

Mack Inc. uses a weighted-average process costing system. Direct materials and conversion costs are incurred evenly during the production process. During the month of October, the following costs were incurred.

Direct materials	\$39,700
Conversion costs	70,000

The work-in-process inventory as of October 1 consisted of 5,000 units, valued at \$4,300, that were 20% complete. During October, 27,000 units were transferred out. Inventory as of October 31 consisted of 3,000 units that were 50% complete. The weighted-average inventory cost per unit completed in October was

- a. \$3.51.
- b. \$3.88.
- c. \$3.99.
- d. \$4.00.

190. CSO: 1C2b LOS: 1C2b

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

Production Flow	Physical Units
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method. The total raw material costs in the ending work-in-process inventory for December is

- \$120.
- \$72.
- \$60.
- \$36.

191. CSO: 1C2b LOS: 1C2c

A company that uses a process costing system inspects its goods at the 60% stage of completion. If the firm's ending work-in-process inventory is 80% complete, how would the firm account for its normal and abnormal spoilage?

- Both normal and abnormal spoilage costs would be added to the cost of the good units completed during the period.
- Both normal and abnormal spoilage costs would be written off as an expense of the period.
- Normal spoilage costs would be added to the cost of the good units completed during the period; in contrast, abnormal spoilage costs would be written off as a loss.
- Normal spoilage costs would be allocated between the cost of good units completed during the period and the ending work-in-process inventory. In contrast, abnormal spoilage costs would be written off as a loss.

192. CSO: 1C2b LOS: 1C2c

When considering normal and abnormal spoilage, which one of the following is theoretically the **best** accounting method for spoilage in a process-costing system?

- a. Both normal and abnormal spoilage cost should be charged to a separate expense account.
- b. Normal spoilage cost should be charged to good units and abnormal spoilage cost should be charged to a separate expense account.
- c. Both normal and abnormal spoilage costs should be charged to good units.
- d. Normal spoilage costs should be charged to a separate expense account and abnormal spoilage cost should be charged to good units.

193. CSO: 1C2b LOS: 1C2b

Southwood Industries uses a process costing system and inspects its goods at the end of manufacturing. The inspection as of June 30 revealed the following information for the month of June.

Good units completed	16,000
Normal spoilage (units)	300
Abnormal spoilage (units)	100

Unit costs were: materials, \$3.50; and conversion costs, \$6.00. The number of units that Southwood would transfer to its finished goods inventory and the related cost of these units are

	<u>Units Transferred</u>	<u>Cost</u>
a.	16,000	\$152,000.
b.	16,000	\$154,850.
c.	16,000	\$155,800.
d.	16,300	\$154,850.

194. CSO: 1C2b LOS: 1C2f

Colt Company uses a weighted-average process cost system to account for the cost of producing a chemical compound. As part of production, Material B is added when the goods are 80% complete. Beginning work-in-process inventory for the current month was 20,000 units, 90% complete. During the month, 70,000 units were started in process, and 65,000 units were completed. There were no lost or spoiled units. If the ending inventory was 60% complete, the total equivalent units for Material B for the month was

- a. 65,000 units.
- b. 70,000 units.
- c. 85,000 units.
- d. 90,000 units.



195. CSO: 1C2b LOS: 1C2b

Oster Manufacturing uses a weighted-average process costing system and has the following costs and activity during October.

Materials	\$40,000
Conversion cost	<u>32,500</u>
Total beginning work-in-process inventory	<u>\$72,500</u>

Materials	\$ 700,000
Conversion cost	<u>617,500</u>
Total production costs - October	<u>\$1,317,500</u>

Production completed	60,000 units
Work-in-process, October 31	20,000 units

All materials are introduced at the start of the manufacturing process, and conversion cost is incurred uniformly throughout production. Conversations with plant personnel reveal that, on average, month-end in-process inventory is 25% complete. Assuming no spoilage, how should Oster's October manufacturing cost be assigned?

	<u>Production Completed</u>	<u>Work-in-Process</u>
a.	\$1,042,500	\$347,500.
b.	\$1,095,000	\$222,500.
c.	\$1,155,000	\$235,000.
d.	\$1,283,077	\$106,923.

196. CSO: 1C2b LOS: 1C2f

San Jose Inc. uses a weighted-average process costing system. All materials are introduced at the start of manufacturing, and conversion cost is incurred evenly throughout production. The company started 70,000 units during May and had the following work-in-process inventories at the beginning and end of the month.

May 1            30,000 units, 40% complete

May 31            24,000 units, 25% complete

Assuming no spoilage or defective units, the total equivalent units used to assign costs for May are

	<u>Materials</u>	<u>Conversion Cost</u>
a.	70,000	70,000.
b.	82,000	82,000.
c.	100,000	70,000.
d.	100,000	82,000.

197. CSO: 1C2b LOS: 1C2b

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

<u>Production Flow</u>	<u>Physical Units</u>
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method. The total conversion cost assigned to units transferred to the next department in December was

- a. \$1,664.
- b. \$1,600.
- c. \$1,513.
- d. \$1,484.

198. CSO: 1C2b LOS: 1C2f

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

<u>Production Flow</u>	<u>Physical Units</u>
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the first-

in, first-out (FIFO) process-costing method. The equivalent units of production used to calculate conversion costs for December was

- a. 110 units.
- b. 104 units.
- c. 100 units.
- d. 92 units.

199. CSO: 1C2b LOS: 1C2f

Jones Corporation uses a first-in, first-out (FIFO) process costing system. Jones has the following unit information for the month of August.

	<u>Units</u>
Beginning work-in-process inventory, 100% complete for materials, 75% complete for conversion cost	10,000
Units completed and transferred out	90,000
Ending work-in-process inventory, 100% complete for materials, 60% complete for conversion costs	8,000

The number of equivalent units of production for conversion costs for the month of August is

- a. 87,300.
- b. 88,000.
- c. 92,300.
- d. 92,700.

200. CSO: 1C2b LOS: 1C2f

Waller Co. uses a weighted-average process-costing system. Material B is added at two different points in the production of shirms, 40% is added when the units are 20% completed, and the remaining 60% of Material B is added when the units are 80% completed. At the end of the quarter, there are 22,000 shirms in process, all of which are 50% completed. With respect to Material B, the ending shirms in process represent how many equivalent units?

- a. 4,400 units.
- b. 8,800 units.
- c. 11,000 units.
- d. 22,000 units.

201. CSO: 1C2c LOS: 1C2a

When using activity-based costing techniques, which one of the following departmental activities would be expected to use machine hours as a cost driver to allocate overhead costs to production?

- a. Plant cafeteria.
- b. Machine setups.
- c. Material handling.
- d. Robotics painting.

202. CSO: 1C2c LOS: 1C2a

A company is considering the implementation of an activity-based costing and management program. The company

- a. should focus on manufacturing activities and avoid implementation with service-type functions.
- b. would probably find a lack of software in the marketplace to assist with the related recordkeeping.
- c. would normally gain added insights into causes of cost.
- d. would likely use fewer cost pools than it did under more traditional accounting methods.

203. CSO: 1C2c LOS: 1C2a

All of the following are likely to be used as a cost allocation base in activity-based costing **except** the

- a. number of different materials used to manufacture the product.
- b. units of materials used to manufacture the product.
- c. number of vendors supplying the materials used to manufacture the product.
- d. cost of materials used to manufacture the product.

204. CSO: 1C2c LOS: 1C2h

Pelder Products Company manufactures two types of engineering diagnostic equipment used in construction. The two products are based upon different technologies, x-ray and ultra-sound, but are manufactured in the same factory. Pelder has computed the manufacturing cost of the x-ray and ultra-sound products by adding together direct materials, direct labor, and overhead cost applied based on the number of direct labor hours. The factory has three overhead departments that support the single production line that makes both products. Budgeted overhead spending for the departments is as follows.

Department			
<u>Engineering design</u>	<u>Material handling</u>	<u>Setup</u>	<u>Total</u>
\$6,000	\$5,000	\$3,000	<u>\$14,000</u>

Pelder's budgeted manufacturing activities and costs for the period are as follows.

Product

<u>Activity</u>	<u>X-Ray</u>	<u>Ultra-Sound</u>
Units produced and sold	50	100
Direct materials used	\$5,000	\$8,000
Direct labor hours used	100	300
Direct labor cost	\$4,000	\$12,000
Number of parts used	400	600
Number of engineering changes	2	1
Number of product setups	8	7

The budgeted cost to manufacture one ultra-sound machine using the activity-based costing method is

- a. \$225.
- b. \$264.
- c. \$293.
- d. \$305.

205. CSO: 1C2c LOS: 1C2h

The Chocolate Baker specializes in chocolate baked goods. The firm has long assessed the profitability of a product line by comparing revenues to the cost of goods sold. However, Barry White, the firm's new accountant, wants to use an activity-based costing system that takes into consideration the cost of the delivery person. Listed below are activity and cost information relating to two of Chocolate Baker's major products.

	<u>Muffins</u>	<u>Cheesecake</u>
Revenue	\$53,000	\$46,000
Cost of goods sold	26,000	21,000
<u>Delivery Activity</u>		
Number of deliveries	150	85
Average length of delivery	10 Minutes	15 Minutes
Cost per hour for delivery	\$20.00	\$20.00

Using activity-based costing, which one of the following statements is **correct**?

- a. The muffins are \$2,000 more profitable.
- b. The cheesecakes are \$75 more profitable.
- c. The muffins are \$1,925 more profitable.
- d. The muffins have a higher profitability as a percentage of sales and, therefore, are more advantageous.

206. CSO: 1C2c LOS: 1C2h

Atmel Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$ 450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead costs	<u>\$ 975,000</u>

Using activity-based costing, the per unit overhead cost allocation of receiving costs for product A is

- a. \$3.75.
- b. \$10.75.
- c. \$19.50.
- d. \$28.13.

207. CSO: 1C2c LOS: 1C2h

A profitable company with five departments uses plantwide overhead rates for its highly diversified operation. The firm is studying a change to either allocating overhead by using departmental rates or using activity-based costing (ABC). Which one of these two methods will likely result in the use of a greater number of cost allocation bases and more accurate costing results?

	<u>Greater Number of Allocation Bases</u>	<u>More Accurate Costing Results</u>
a.	Departmental	Departmental.
b.	Departmental	ABC.
c.	ABC	Departmental.
d.	ABC	ABC.

208. CSO: 1C3a LOS: 1C3e

In practice, items such as wood screws and glue used in the production of school desks and chairs would **most** likely be classified as

- a. direct labor.
- b. factory overhead.
- c. direct materials.
- d. period costs.

209. CSO: 1C3b LOS: 1C23c

Young Company is beginning operations, and is considering three alternative ways in which to allocate manufacturing overhead to individual units produced. Young can use a plantwide rate, departmental rates, or activity based costing. Young will produce many types of products in its single plant, and not all products will be processed through all departments. In which one of the following independent situations would reported net income for the first year be the same regardless of which overhead allocation method had been selected?

- a. All production costs approach those costs that were budgeted.
- b. The sales mix does not vary from the mix that was budgeted.
- c. All manufacturing overhead is a fixed cost.
- d. All ending inventory balances are zero.

210. CSO: 1C3b LOS: 1C3d

The **most** important criterion in accurate cost allocations is

- a. using a simple allocation method.
- b. allocating fixed and variable costs by using the same allocation base.
- c. using homogeneous cost pools.
- d. using multiple drivers for each cost pool.

211. CSO: 1C3b LOS: 1C3g

Cynthia Rogers, the cost accountant for Sanford Manufacturing, is preparing a management report which must include an allocation of overhead. The budgeted overhead for each department and the data for one job are shown below.

	<u>Department</u>	
	<u>Tooling</u>	<u>Fabricating</u>
Supplies	\$ 690	\$ 80
Supervisor's salaries	1,400	1,800
Indirect labor	1,000	4,000
Depreciation	1,200	5,200
Repairs	<u>4,400</u>	<u>3,000</u>
Total budgeted overhead	<u>\$8,690</u>	<u>\$14,080</u>
Total direct labor hours	440	640
Direct labor hours on Job #231	10	2

Using the departmental overhead application rates, and allocating overhead on the basis of direct labor hours, overhead applied to Job #231 in the Tooling Department would be

- a. \$44.00
- b. \$197.50
- c. \$241.50
- d. \$501.00.

212. CSO: 1C3b LOS: 1C3g

Patterson Corporation expects to incur \$70,000 of factory overhead and \$60,000 of general and administrative costs next year. Direct labor costs at \$5 per hour are expected to total \$50,000. If factory overhead is to be applied per direct labor hour, how much overhead will be applied to a job incurring 20 hours of direct labor?

- a. \$28.
- b. \$120.
- c. \$140.
- d. \$260.

213. CSO: 1C3c LOS: 1C3f

Henry Manufacturing, which uses direct labor hours to apply overhead to its product line, undertook an extensive renovation and modernization program two years ago. Manufacturing processes were reengineered, considerable automated equipment was acquired, and 60% of the company's nonunion factory workers were terminated. Which of the following statements would apply to the situation at Henry?

- I. The company's factory overhead rate has likely increased.
  - II. The use of direct labor hours seems to be appropriate.
  - III. Henry will lack the ability to properly determine labor variances.
  - IV. Henry has likely reduced its ability to quickly cut costs in order to respond to economic downturns.
- a. I, II, III, and IV.
  - b. I and IV only.
  - c. II and IV only.
  - d. I and III only.

214. CSO: 1C3c LOS: 1C3h

Jones Tax Company has three divisions - Compliance, Tax Planning, and Financial Consulting. Based on the divisional data presented below, which one of the allocation bases for common company expenses would likely have the **least** negative behavioral impact on the Financial Consulting Division manager?

Compliance    Tax Planning    Financial Consulting



Revenues	\$4,500,000	\$6,000,000	\$4,500,000
Variable expenses	1,500,000	3,750,000	2,250,000
No. of employees	68	76	56

- Revenues.
- Contribution margin.
- Equal sharing.
- Number of employees.

215. CSO: 1C3c LOS: 1C3g

Atmel Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead	<u>\$975,000</u>

The cost driver for engineering costs is the number of production orders per product line. Using activity-based costing, the engineering cost per unit for Product B would be

- \$4.00.
- \$10.00.
- \$15.00.
- \$29.25.

216. CSO: 1C3d LOS: 1C3p

When allocating costs from one department to another, a dual-rate cost-allocation method may be used. The dual-rate cost-allocation method is **most** useful when

- two or more cost pools are to be allocated.
- two or more departments' costs are to be allocated.
- two or more products are produced.
- costs are separated into variable-cost and fixed-cost subpools.

217. *CSO: 1C3d LOS: 1C3p*  
The management of ROX Company wishes to encourage all other departments to use the legal department, as circumstances warrant. To accomplish this, legal department costs should be
- allocated to users on the basis of the actual cost of hours used.
  - allocated to users on the basis of the budgeted cost of actual hours used.
  - allocated to users on the basis of standard cost for the type of service provided.
  - absorbed as a corporate expense.
218. *CSO: 1C3d LOS: 1C3o*  
Boston Furniture Company manufactures several steel products. It has three production departments, Fabricating, Assembly, and Finishing. The service departments include Maintenance, Material Handling, and Designing. Currently, the company does not allocate service department costs to the production departments. John Baker, who has recently joined the company as the new cost accountant, believes that service department rates should be developed and charged to the production departments for services requested. If the company adopts this new policy, the production department managers would be **least** likely to
- request an excessive amount of service.
  - replace outdated and inefficient systems.
  - refrain from using necessary services.
  - be encouraged to control costs.
219. *CSO: 1C3d LOS: 1C3p*  
Cotton Company has two service departments and three operating departments. In allocating service department costs to the operating departments, which of the following three methods (direct, step-down, reciprocal) will result in the same amount of service department costs being allocated to each operating department, regardless of the order in which the service department costs are allocated?
- Direct and reciprocal methods only.
  - Step-down and reciprocal methods only.
  - Direct and step-down methods only.
  - Direct method only.
220. *CSO: 1C3d LOS: 1C3p*  
Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the

Information Systems Department. Which one of the following departmental allocations is present in the reciprocal method of departmental allocation? The costs of the

- a. Assembly Department are allocated to the Information Systems Department and the Personnel Department.
- b. Information Systems Department are allocated to the Machining Department and the costs of the Machining Department are allocated to the Assembly Department.
- c. Personnel Department are allocated solely to the Information Systems Department.
- d. Information Systems Department are allocated to the Personnel Department, Machining Department, and Assembly Department.

221. *CSO: 1C3d LOS: 1C3p*

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the Information Systems Department. If Wilcox uses the step-down method of departmental allocation, which one of the following cost allocations would **not** occur? Some of the costs of the

- a. Personnel Department would be allocated to the Information Systems Department.
- b. Information Systems Department would be allocated to the Personnel Department.
- c. Personnel Department would be allocated to the Assembly Department.
- d. Personnel Department would be allocated to the Assembly Department and the Machining Department.

222. *CSO: 1C3d LOS: 1C3p*

Render Inc. has four support departments (maintenance, power, human resources, and legal) and three operating departments. The support departments provide services to the operating departments as well as to the other support departments. The method of allocating the costs of the support departments that **best** recognizes the mutual services rendered by support departments to other support departments is the

- a. direct allocation method.
- b. dual-rate allocation method.
- c. step-down allocation method.
- d. reciprocal allocation method.

223. CSO: 1C3d LOS: 1C3p

Logo Inc. has two data services departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows.

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
		<u>9,300</u>	<u>11,600</u>

If Logo employs the direct method of allocating service department costs, the overhead of the Systems Department would be allocated by dividing the overhead amount by

- 1,200 hours.
- 8,100 hours.
- 9,000 hours.
- 9,300 hours.

224. CSO: 1C3d LOS: 1C3p

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year.

	<u>Support Departments</u>		<u>Operating Departments</u>		<u>Total</u>
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work furnished					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

If Adam uses the step-down method, beginning with the Maintenance Department, to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- \$415,526.
- \$422,750.
- \$442,053.
- \$445,000.

225. CSO: 1C3d LOS: 1C3p

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than does the Information Systems Department. If Wilcox uses the direct method of departmental allocation, which one of the following cost allocations would occur? Some of the costs of the

- Personnel Department would be allocated to the Information Systems Department.
- Machining Department would be allocated to the Information Systems Department.
- Information Systems Department would be allocated to the Assembly Department.
- Assembly Department would be allocated to the Machining Department.

226. CSO: 1C3d LOS: 1C3p

Logo Inc. has two data services departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows.

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
		<u>9,300</u>	<u>11,600</u>

Logo employs the step-down method of allocating service department costs and begins with the Systems Department. Which one of the following correctly denotes the amount of the Systems Department's overhead that would be allocated to the Facilities Department and the Facilities Department's overhead charges that would be allocated to the Machining Department?

- |    |                              |                                |
|----|------------------------------|--------------------------------|
|    | <u>Systems to Facilities</u> | <u>Facilities to Machining</u> |
| a. | \$0                          | \$20,000.                      |
| b. | \$19,355                     | \$20,578.                      |
| c. | \$20,000                     | \$20,000.                      |
| d. | \$20,000                     | \$24,000.                      |

227. CSO: 1C3d LOS: 1C3p

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year.

	<u>Support Departments</u>		<u>Operating Departments</u>		
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work furnished					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

If Adam uses the direct method to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- \$418,000.
- \$422,750.
- \$442,053.
- \$445,000.

228. CSO: 1C4a LOS: 1C4b

Presario Inc. recently installed just-in-time production and purchasing systems. If Presario's experience is similar to that of other companies, Presario will likely

- reduce the number of suppliers with which it does business.
- increase the size of individual orders of raw materials.
- increase the dollar investment in finished goods inventory.
- be less reliant on sales orders as a "trigger" mechanism for production runs.

229. CSO: 1C4c LOS: 1C4i

According to the theory of constraints, all of the following activities help to relieve the problem of a bottleneck in operations **except**

- eliminating idle time at the bottleneck operation.
- reducing setup time at the bottleneck operation.
- shifting products that do not have to be made on bottleneck machines to non-bottleneck machines.
- increasing the efficiency of operations at non-bottleneck machines.

230. *CSO: 1C4c LOS: 1C4j*  
When demand for a product or products exceeds production capacity, which one of the following is the first step that managers should take?
- Spend money to eliminate the bottleneck.
  - Focus their efforts on constraint identification.
  - Change the throughput of operations.
  - Apply activity-based management to solve the problem.

231. *CSO: 1C5a LOS: 1C5c*  
A company desires to prepare two sets of financial statements. Conventional financial statements would be prepared along with a set that is totally consistent with value-chain analysis. How would customer service costs be treated in the two statements?

	<u>Conventional Financial Statements</u>	<u>Value-Chain Financial Statements</u>
a.	Inventoriable cost	Product cost.
b.	Inventoriable cost	Non-product cost.
c.	Noninventoriable cost	Product cost.
d.	Noninventoriable cost	Non-product cost.

232. *CSO: 1C5a LOS: 1C5b*  
Which one of the following lists of functions is in proper value chain order?
- Research and development, marketing, and customer services.
  - Production, marketing, and production design.
  - Production design, distribution, and marketing.
  - Research and development, customer service, and distribution.

233. *CSO: 1C5b LOS: 1C5d*  
Consider the following manufacturing-related activities.

- Conducting the final assembly of wooden furniture.
- Moving completed production to the finished goods warehouse.
- Painting newly-manufactured automobiles.
- Setting up a machine related to a new production run.
- Reworking defective goods to bring them up to quality standards.

The activities that would be classified as value-added activities are

- II, III, IV, and V only.
- I, IV, and V only.
- I, III, and V only.
- I and III only.

234. CSO: 1C5c LOS: 1C5e

From the perspective of the management accountant, which one of the following represents a **major** disadvantage of business process reengineering?

- a. The focus is, to a large extent, on short-term results.
- b. It often results in a decreased use of centralized data bases.
- c. Internal control mechanisms are often disassembled.
- d. It results in heavier maintenance for legacy systems.

235. CSO: 1C5d LOS: 1C5g

Retail Partners Inc., which operates eight discount store chains, is seeking to reduce the costs of its purchasing activities through reengineering and a heavier use of electronic data interchange (EDI). Which of the following benchmarking techniques would be appropriate in this situation?

- I. A comparison of the purchasing costs and practices of each of Retail Partners' store chains to identify their internal "best in class."
  - II. A comparison of the practices of Retail Partners to those of Discount City, another retailer, whose practices are often considered "best in class."
  - III. A comparison of the practices of Retail Partners to those of Capital Airways, an international airline, whose practices are often considered "best in class."
  - IV. An in-depth review of a retail trade association publication on successful electronic data interchange applications.
- a. II and IV only.
  - b. I and II only.
  - c. I and IV only.
  - d. I, II, III, and IV.

236. CSO: 1C5d LOS: 1C5g

All of the following are examples of benchmarking standards **except**

- a. the performance of the unit during the previous year.
- b. the best performance of the unit in comparable past periods.
- c. a comparison with a similar unit within the same company.
- d. the best performance of a competitor with a similar operation.



237. CSO: 1C5h LOS: 1C5m

Leese Inc. has the following quality financial data for its most recent fiscal year.

Rework costs	\$110,000
Warranty repair costs	280,000
Product line inspection	95,000
Design engineering	300,000
Supplier evaluation	240,000
Labor training	150,000
Product testing	65,000
Breakdown maintenance	70,000
Product scrap	195,000
Cost of returned goods	180,000
Customer support	35,000
Product liability claims	80,000

The total amount of prevention costs that should be reported in a Cost of Quality report for the year is

- a. \$390,000.
- b. \$450,000.
- c. \$690,000.
- d. \$755,000.

238. CSO: 1C5h LOS: 1C5l

When measuring the cost of quality, the cost of inspecting incoming raw materials is a(n)

- a. prevention cost.
- b. appraisal cost.
- c. internal failure cost.
- d. external failure cost.

239. CSO: 1C5h LOS: 1C5l

In measuring the cost of quality, which one of the following is considered an appraisal cost?

- a. Rework cost.
- b. Product testing cost.
- c. Warranty claims cost.
- d. Equipment maintenance cost.

240. *CSO: 1C5h LOS: 1C5l*  
External failure costs include all of the following costs **except** those related to
- lost sales and lost customers.
  - warranty obligations.
  - product liability suits.
  - product field testing.
241. *CSO: 1C5h LOS: 1C5l*  
When evaluating the cost of quality in an organization, which one of the following would be considered an internal failure cost?
- The cost to rework defective units.
  - The cost to inspect units produced.
  - The warranty repair costs.
  - Product testing.

#### **Section D: Internal Controls**

242. *CSO: 1D1a LOS: 1D1b*  
When assessing a company's internal control structure policies and procedures, the primary consideration is whether they
- prevent management override.
  - relate to the control environment.
  - reflect management's philosophy and operating style.
  - affect the financial statement assertions.
243. *CSO: 1D1b LOS: 1D1e*  
The basic concepts implicit in internal accounting controls include the following.
- The cost of the system should not exceed benefits expected to be attained.
  - The overall impact of the control procedure should not hinder operating efficiency.
- Which one of the following recognizes these two factors?
- Limitations.
  - Management responsibility.
  - Methods of data processing.
  - Reasonable assurance.

244. CSO: 1D1b LOS: 1D1h

Which one of the following functions performed in an organization is a violation of internal control?

- a. A mail clerk opening the mail compares the check received with the source document accompanying the payment, noting the amount paid, then forwards the checks daily (along with a listing of the cash receipts) to the Cashier for deposit.
- b. A mail clerk opening the mail compares the check received with the source document accompanying the payment, noting the amount paid, then forwards the source documents that accompany the payments (along with a listing of the cash receipts) to Accounts Receivable, on a daily basis, for posting to the subsidiary ledger.
- c. At the end of the week the Cashier prepares a deposit slip for all of the cash receipts received during the week.
- d. The General Ledger clerk compares the summary journal entry, received from the Cashier for cash receipts applicable to outstanding accounts, with the batch total for posting to the Subsidiary Ledger by the Accounts Receivable clerk.

245. CSO: 1D1b LOS: 1D1g

In order to properly segregate duties, which function within the computer department should be responsible for reprocessing the errors detected during the processing of data?

- a. Department manager.
- b. Systems analyst.
- c. Computer programmer.
- d. Data control group.

246. CSO: 1D1b LOS: 1D1g

Which one of the following methods, for the distribution of employees' paychecks, would provide the **best** internal control for the organization?

- a. Delivery of the paychecks to each department supervisor, who in turn would distribute paychecks directly to the employees in his/her department.
- b. Direct deposit in each employee's personal bank account.
- c. Distribution of paychecks directly to each employee by a representative of the Human Resource department.
- d. Distribution of paychecks directly to each employee by the payroll manager.

247. *CSO: 1D1b LOS: 1D1e*  
Which one of the following would be **most** effective in deterring the commission of fraud?
- a. Policies of strong internal control, segregation of duties, and requiring employees to take vacations.
  - b. Policies of strong internal control and punishments for unethical behavior.
  - c. Employee training, segregation of duties, and punishment for unethical behavior.
  - d. Hiring ethical employees, employee training, and segregation of duties.
248. *CSO: 1D1e LOS: 1D1q*  
A public corporation that must meet the provisions of the Foreign Corrupt Practices Act of 1977 should have a compliance program that includes all of the following steps **except**
- a. an authorized and properly signed agreement that it will abide by the Act.
  - b. documentation of the corporation's existing internal accounting control systems.
  - c. a cost/benefit analysis of the controls and the risks that are being minimized.
  - d. a system of quality checks to evaluate the internal accounting control system.
249. *CSO: 1D1e LOS: 1D1q*  
The principal impetus for the enactment of the Foreign Corrupt Act by the U.S. Congress was to
- a. discourage unethical behavior by foreigners employed by U.S. firms.
  - b. promote the mandates issued by the United Nations with regard to global trade between its member nations.
  - c. prevent the bribery of foreign officials by U.S. firms seeking to do business overseas.
  - d. require mandatory documentation of the evaluation of internal controls by the independent auditors.
250. *CSO: 1D2a LOS: 1D2a*  
Which one of the following statements, regarding internal auditing responsibility and authority, is **incorrect**?
- a. Internal auditors are expected to comply with standards of professional conduct.
  - b. The understandability of audit reports is the responsibility of internal auditors.
  - c. Follow-up on actions noted in audit findings is not required of internal auditors.
  - d. Internal auditors are responsible to service the organization.

251. *CSO: 1D2a LOS: 1D2b*  
Which one of the following accounting and management techniques is **least** likely to assist internal auditors in appraising the efficiency with which resources are being used by respective profit centers?
- a. Cost Variance Analysis.
  - b. Flexible Budgets.
  - c. Activity-based management.
  - d. Joint cost allocations.
252. *CSO: 1D2b LOS: 1D2e*  
If a corporation may be violating federal and state laws governing environmental concerns, which one of the following types of audit will **best** assist in ascertaining whether such situations may exist?
- a. Operational audit.
  - b. Compliance Audit.
  - c. Financial audit.
  - d. Management Audit.
253. *CSO: 1D2b LOS: 1D2e*  
Which one of the following types of audits would be **most** likely to focus on objectives related to the efficient use of resources?
- a. Compliance audit.
  - b. Information systems audit.
  - c. Independent audit.
  - d. Operational audit.
254. *CSO: 1D2b LOS: 1D2e*  
When an internal auditor expresses an opinion as to the efficiency and effectiveness of an entity's activities and makes recommendations for improvements, the auditor is conducting a(n)
- a. financial statement audit of a public company.
  - b. financial statement audit of a municipality.
  - c. compliance audit.
  - d. operational audit.

255. *CSO: 1D3a LOS: 1D3b*  
A computer virus is different from a “Trojan Horse” because the virus can
- corrupt data.
  - alter programming instructions.
  - replicate itself.
  - erase executable files.
256. *CSO: 1D3a LOS: 1D3c*  
In situations where it is crucial that data be entered correctly into an accounting information system, the **best** method of data control would be to use
- key verification.
  - compatibility tests.
  - limit checks.
  - reasonableness tests.
257. *CSO: 1D3b LOS: 1D3c*  
The **most** appropriate control to verify that a user is authorized to execute a particular on-line transaction is a
- password.
  - challenge/response system.
  - compatibility check.
  - closed-loop verification.
258. *CSO: 1D3c LOS: 1D3d*  
In securing the client/server environment of an information system, a principal disadvantage of using a single level sign-on password is the danger of creating a(n)
- trap door entry point.
  - single point of failure.
  - administrative bottleneck.
  - lock-out of valid users.
259. *CSO: 1D3c LOS: 1D3e*  
Which one of the following represents a weakness in the internal control system of an electronic data processing system?
- The data control group reviews and tests procedures and handles the reprocessing of errors detected by the computer.

- b. The accounts receivable clerk prepares and enters data into the computer system and reviews the output for errors.
- c. The systems analyst designs new systems and supervises testing of the system.
- d. The computer operator executes programs according to operating instructions and maintains custody of programs and data files.

260. CSO: 1D3c LOS: 1D3i

Confidential data can be securely transmitted over the internet by using

- a. single-use passwords.
- b. firewalls.
- c. encryption.
- d. digital signatures.

261. CSO: 1D3c LOS: 1D3i

All of the following are examples of encryption techniques used for computer security **except**

- a. public key.
- b. private key.
- c. primary key.
- d. authentication key.

262. CSO: 1D3d LOS: 1D3k

The data entry staff of National Manufacturing Inc. has responsibility for converting all of the plant's shipping information to computerized records. The information flow begins when the shipping department sends a copy of a shipping order to the data entry staff. A data entry operator scans the shipping order information onto a hand-held data storage device. Verification clerks then check the computerized record with the original shipping orders. When a given batch of files has been reviewed and corrected, as necessary, the information is uploaded to the company's mainframe system at the home office.

The **most** effective way to visualize and understand this set of activities would be through the use of a

- a. program flowchart.
- b. decision table.
- c. document flowchart.
- d. Gantt chart.

263. CSO: 1D3f LOS: 1D3m

When attempting to restore computing facilities at an alternate site following a disaster, which one of the following should be restored first?

- a. Online system.
- b. Batch system.
- c. Operating system.
- d. Decision support system.

### Section E: Professional Ethics

264. CSO: 1E1a LOS: 1E1c

Recently Fan Club Inc. submitted a budget for the coming year to management. Included in the budget were the plans for a new product, a rechargeable fan. The new fan will not only last longer than the competitor's product but is also more quiet. While not yet approved, the budget called for aggressive advertising to support its sales targets, as the business community was not yet aware that Fan Club was close to production of a new fan. A member of the management accounting staff "shared" the budget with a distributor. In accordance with IMA's "Statement of Ethical Professional Practice," which one of the following would **best** represent an ethical conflict in this situation?

- a. The budget has not been approved and therefore is not for publication.
- b. The price has not been established, so expectations must be managed.
- c. The staff member exposed the company to a potential lawsuit.
- d. The employee should refrain from disclosing confidential information.



## **CMA Part 1 – Financial Planning, Performance and Control**

### **Answers to Examination Practice Questions**

#### **Section A: Planning, Budgeting and Forecasting**

1. Correct answer b. Cerawell has no control over the actions of its competitors; it can only respond to these actions, e.g., increase the company's research and development efforts. Cerawell has some control over the other alternatives presented.
2. Correct answer d. Budget preparation forces management planning, can provide performance criteria, and promotes communication and coordination within an organization. However, a budget cannot control unauthorized expenditures – these are usually caused by weak internal controls.
3. Correct answer d. Participation in budget preparation at all levels promotes acceptance of budgets and allows those who have to implement plans to participate in the planning process.
4. Correct answer d. Those closest to operations should participate in budget development as they are most knowledgeable and can supply reliable information on which to base the budget.
5. Correct answer c. A budget that is not supported by top management has very little chance of success as subordinates will attach little importance to the budget and will focus on what management does consider important.
6. Correct answer d. One of the few advantages of top-down budgeting is that it is less time-consuming than participatory budgeting as there is little need for discussion and compromise.
7. Correct answer d. Standard costing traces direct costs to a cost object. As a result, standard costs are most often stated as unit costs. Budgeted costs are generally presented as total costs as one of the objectives of budgeting is to forecast the overall financial condition.
8. Correct answer d. The involvement of all those affected in the development of standard costs is the team development approach. The alternative answers presented generally include those who are not operationally involved.
9. Correct answer d. Ideal standards are those achieved under ideal working conditions and are, therefore, difficult to achieve under realistic working conditions. Practical standards are developed under actual working conditions and are, therefore, a better motivating target for manufacturing personnel.

10. Correct answer d. The price agreed upon by the purchasing manager and the appropriate level of company management is the most reasonable selection as it takes into consideration actual experience and future plans for requiring the component.
11. Correct answer d. Standards that reflect current experience are realistic and will provide the best information for decision making.
12. Correct answer b. The fact that Michigan's budgeting process was based on a bottom-up philosophy would indicate that standards were being set by those with operational knowledge. This is inconsistent with the consultant's findings that labor standards are too tight.
13. Correct answer c. Simple regression analysis estimates the relationship between the dependent variable and one independent variable while multiple regression analysis estimates the relationship between the dependent variable and two or more independent variables.
14. Correct answer c. Using linear regression, there are three criteria for selecting the independent variable: economic plausibility, goodness of fit, and the scope of the regression line.
15. Correct answer d. With a significant change in labor productivity, the labor rate is no longer "purchasing" the same amount of product. Therefore, there is a significant impact on the reliability of the model.
16. Correct answer d.
- |           |   |                               |               |
|-----------|---|-------------------------------|---------------|
| Sales (S) | = | $\$10,000 + \$2.50A$          | (A = \$1,000) |
|           | = | $\$10,000 + \$2.50 (\$1,000)$ |               |
|           | = | $\$10,000 + \$2,500$          |               |
|           | = | <u><math>\\$12,500</math></u> |               |
17. Correct answer c.
- |   |   |                           |
|---|---|---------------------------|
| Y | = | $1.54X + 5.23$            |
|   | = | $1.54 (10) + 5.23$        |
|   | = | $15.4 + 5.23$             |
|   | = | <u><math>20.63</math></u> |
18. Correct answer b. Learning curve analysis is a function that shows how labor hours per unit decline as units of production increase due to workers learning and becoming better at their jobs.
19. Correct answer a. In the cumulative average-time learning model, the cumulative average time per unit declines by a constant percentage each time the cumulative quantity of units produced doubles.

Unit 1	10,000 hrs.	
Unit 2	8,000 hrs.	(10,000 x .80)
Unit 4	6,400 hrs.	(8,000 x .80)
Unit 8	<u>5,120 hrs.</u>	(6,400 x .80)

20. Correct answer d. In the cumulative average-time learning model, the cumulative average time per unit declines by a constant percentage each time the cumulative quantity of units produced doubles.

21. Correct answer d.  $\text{Average hrs. for 20 units} = \frac{(5,000 + 3,000)}{20 \text{ units}}$   
 $\text{Average hrs. for 10 units} = \frac{5,000}{10 \text{ units}}$   
 $= 400 \text{ hours} \div 500 \text{ hours}$   
 $= \underline{80\% \text{ Learning rate}}$

22. Correct answer b.  $\text{Cumulative direct labor hours} = 8 \text{ units} \times 5,120 \text{ hours}^*$   
 $= \underline{40,960 \text{ hours}}$

\* Unit 1 10,000 hrs.  
 Unit 2 8,000 hrs. (10,000 x .80)  
 Unit 4 6,400 hrs. (8,000 x .80)  
 Unit 8 5,120 hrs. (6,400 x .80)

23. Correct answer b. 

Unit 4	\$9,800 cost	(\$14,000 x .70)
Unit 8	\$6,860 cost	(\$9,800 x .70)

  
 $\text{Total Cost} = 8 \text{ units} \times \$6,860 \text{ cost per unit}$   
 $= \underline{\$54,880}$

24. Correct answer c.  $\text{Learning curve} = 16 \text{ hours} \div 20 \text{ hours}$   
 $= \underline{80\%}$

Hours per batch:	Batch 4	12.80 hours	(16 hours x .80)
	Batch 8	10.24 hours	(12.80 hours x .80)

$\text{Average hrs. Units 201-400} = (400 \text{ units} \times 10.24) - (200 \text{ units} \times 12.80)$   
 $= 4,096 - 2,560$   
 $= 1,536 \text{ hours} \div 200 \text{ units}$   
 $= \underline{7.68 \text{ hours}}$

25. Correct answer b. 

<u>Units</u>	<u>Average cost/unit</u>	
4	\$9,800	(\$14,000 x .70)
8	<u>\$6,860</u>	(\$9,800 x .70)

26. Correct answer a.  $\text{Total hours for next 7 units} = 8 \text{ unit total hours} - \text{first unit hours}$   
 $= (8 \times 5,120^*) - 10,000$   
 $= 40,960 - 10,000$   
 $= \underline{30,960 \text{ hours}}$

\* Unit 1 10,000 hrs.  
 Unit 2 8,000 hrs. (10,000 x .80)  
 Unit 4 6,400 hrs. (8,000 x .80)  
 Unit 8 5,120 hrs. (6,400 x .80)

27. Correct answer a.

Batch 1	=	$800 \div 4$ units	=	200 per unit
Batch 2	=	$(800 \times .9) \div 4$ units	=	180 per unit
Batch 4	=	$(1,440 \times .9) \div 8$ units	=	162 per unit

Hours for next 12 units

$$= (16 \times 162) - 800 \text{ for first 4 units}$$

$$= 2,592 - 800$$

$$= \underline{1,792 \text{ hours}}$$

28. Correct answer a.

Unit 4	\$9,800	$(\$14,000 \times .70)$
Unit 8	\$6,860	$(\$9,800 \times .70)$

Cost of next 7 units

$$= (8 \times \$6,860) - \$20,000 \text{ for first unit}$$

$$= \$54,880 - \$20,000$$

$$= \underline{\$34,880}$$

29. Correct answer b.  $(158 \times 0.3) + (.7 \times 148) = 151$  televisions

30. Correct answer a.

Expected value

$$= (.2 \times \$60,000) + (.3 \times \$30,000) + (.3 \times \$10,000) - (.2 \times \$4,000)$$

$$= \$12,000 + \$9,000 + \$3,000 - \$800$$

$$= \underline{\$23,200}$$

31. Correct answer b.

Plan 1 expected value	=	$(\$300,000 \times .4) + (\$240,000 \times .6)$	=	\$264,000
Plan 2 expected value	=	$(\$370,000 \times .4) + (\$180,000 \times .6)$	=	<u>\$256,000</u>
		Plan 1 is greater by		<u>\$ 8,000</u>

32. Correct answer d. Recommend Vendor S which has the least cost (initial purchase plus the cost of failure) as shown below.

Vendor P	=	$(100,000 \times \$35) + [(100,000 \times .10) \times (\$35 + \$25)]$	=	\$4.1 million
Vendor Q	=	$(100,000 \times \$37) + [(100,000 \times .06) \times (\$37 + \$25)]$	=	\$4.072 million
Vendor R	=	$(100,000 \times \$39) + [(100,000 \times .03) \times (\$39 + \$25)]$	=	\$4.092 million
Vendor S	=	$(100,000 \times \$40) + [(100,000 \times .01) \times (\$40 + \$25)]$	=	\$4.065 million

33. Correct answer c. For both actions, the \$650,000 is sunk cost and should not be considered.

$$\begin{aligned}\text{Expected value of investing} &= .6 (\$15.0 \text{ mil} - \$9.5 \text{ mil}) + .4 (\$2.0 \text{ mil} - \$9.5 \text{ mil}) \\ &= \$3.3 \text{ mil} - \$3.0 \text{ mil} \\ &= \underline{\$300,000}\end{aligned}$$

$$\text{Value of not investing} = \underline{(\$100,000)} \text{ additional costs to be paid}$$

34. Correct answer d. Ranking is B: \$34,000, C: \$30,000, A: \$26,000 calculated as follows.

$$\begin{aligned}\text{Investment A} &= .3 (-\$20,000) + .1 (-\$10,000) + .3 (\$30,000) + .2 (\$70,000) + .1 (\$100,000) \\ &= -\$6,000 + -\$1,000 + \$9,000 + \$14,000 + \$10,000 \\ &= \underline{\$26,000}\end{aligned}$$

$$\begin{aligned}\text{Investment B} &= .2 (-\$20,000) + .2 (-\$10,000) + .2 (\$30,000) + .2 (\$70,000) + .2 (\$100,000) \\ &= -\$4,000 + -\$2,000 + \$6,000 + \$14,000 + \$20,000 \\ &= \underline{\$34,000}\end{aligned}$$

$$\begin{aligned}\text{Investment C} &= .3 (-\$20,000) + .1 (-\$10,000) + .2 (\$30,000) + .3 (\$70,000) + .1 (\$100,000) \\ &= -\$6,000 + -\$1,000 + \$6,000 + \$21,000 + \$10,000 \\ &= \underline{\$30,000}\end{aligned}$$

35. Correct answer c.

$$\begin{aligned}\text{Increased units sold} &= .1 (15,000) + .35 (30,000) + .1 (45,000) + .25 (60,000) + .2 (75,000) \\ &= 1,500 + 10,500 + 4,500 + 15,000 + 15,000 \\ &= 46,500 \text{ units}\end{aligned}$$

$$\begin{aligned}\text{Increased profit} &= [46,500 \times (\$5.20 - \$3.20)] - \$40,000 \\ &= \$93,000 - \$40,000 \\ &= \underline{\$53,000}\end{aligned}$$

36. Correct answer b.

$$\begin{aligned}\text{Expected return} &= .1 (-.20) + .2 (.05) + .4 (.15) + .2 (.20) + .1 (.30) \\ &= -.02 + .01 + .06 + .04 + .03 \\ &= \underline{.12 \text{ or } 12\%}\end{aligned}$$

37. Correct answer a. Alternative #1 has the highest expected value as shown below.

$$\begin{aligned}\text{Alternative \#1} &= .1(\$50,000) + .2(\$75,000) + .4(\$100,000) + .3(\$150,000) \\ &= \underline{\$105,000}\end{aligned}$$

$$\begin{aligned}\text{Alternative \#2} &= .1(\$50,000) + .2(\$75,000) + .45(\$100,000) + .25(\$150,000) \\ &= \$102,500\end{aligned}$$

$$\begin{aligned}\text{Alternative \#3} &= .1(\$50,000) + .2(\$75,000) + .4(\$100,000) + .3(\$125,000) \\ &= \$97,500\end{aligned}$$

$$\begin{aligned}\text{Alternative \#4} &= .1(\$150,000) + .2(\$100,000) + .4(\$75,000) + .3(\$50,000) \\ &= \$80,000\end{aligned}$$

38. Correct answer c. Recommend purchasing 12,000 based on expected demand of 11,400.

$$\begin{aligned}\text{Expected demand} &= .1(8,000) + .4(10,000) + .3(12,000) + .2(15,000) \\ &= 11,400\end{aligned}$$

39. Correct answer b. Incorporating non-financial as well as financial measures is beneficial to an organization. The other alternatives given are disadvantages or misuses of traditional budgets.
40. Correct answer c. A financial budget consists of the capital expenditure budget, the cash budget detailing inflows, outflows, and borrowing needs, and the balance sheet. These statements combined with the budgeted income statement produce the Statement of Cash Flows.
41. Correct answer d. The production budget and the purchases budget must be completed before the cost of goods sold budget can be completed. An administrative budget may also be dependent on the planned sales and manufacturing activity and is generally completed after all production revenues and costs have been budgeted.
42. Correct answer c. The revenue or sales budget provides the foundation for a master budget and is therefore prepared first. The production budget is dependent on the amount of projected sales and the direct material budget is based on the forecasted production quantity.
43. Correct answer c. The zero-based budgeting approach looks at operations as if they were just beginning and requires justification for all revenues and expenditures.
44. Correct answer a. Flexible budgets are based on actual output rather than comparing output to a static budget. Flexible budgets make it easier to identify realistic positive and negative variances.
45. Correct answer d. Flexible budgets are based on the output actually achieved and therefore provide a realistic comparison of budgeted and actual revenue and costs.

46. Correct answer d. Flexible budgets are based on the output actually achieved or expected rather than a static amount. Therefore, the required labor for the expected increase in business can be calculated.

47. Correct answer a. Netco's sales will decrease by \$1,050,000 as shown below.

Item 1 =	(200,000 x .8) x (\$50 x 1.1)	=	
=	160,000 x \$55	=	\$ 8,800,000
Item 2 =	(160,000 x .75) x \$10	=	1,200,000
Item 3 =	(300,000 x 1.05) x \$30	=	<u>9,450,000</u>
	Total sales revenue		\$19,450,000
	Original budget		<u>-20,500,000</u>
	Revenue decrease		<u>\$-1,050,000</u>

48. Correct answer b. Hannon's budget for purchased inventory should be \$540,000.

August	\$728,000 ÷ 1.3	=	\$560,000 x .75	=	\$420,000
September	\$624,000 ÷ 1.3	=	\$480,000 x .25	=	<u>120,000</u>
					<u>\$540,000</u>

49. Correct answer c. Streeter should produce 78,000 units as shown below.

Production for 2 <sup>nd</sup> quarter	72,000 x .5	=	36,000
Production for 3 <sup>rd</sup> quarter	84,000 x .5	=	<u>42,000</u>
Production			<u>78,000</u>

50. Correct answer c. Ming should plan to produce 7,133 units next fiscal year.

$$\begin{aligned}
 &\text{Sales} - \text{Beg. Inventory} + \text{Ending Inventory} \\
 &6,300 - 470 + 590 = 6,420 \text{ units} \\
 &\text{To cover 10\% scrap} = 6,420 \div .9 = \underline{7,133 \text{ units}}
 \end{aligned}$$

51. Correct answer b. Savior's production budget for the first quarter is 71,700 units.

Daily sales	=	67,500 ÷ (360 ÷ 4)	=	750 units sold per day
10 days' sales	=	750 x 10 days	=	7,500 units for ending inventory
Production	=	67,500 + 7,500 - (3,500 - 200)	=	<u>71,700 units</u>

52. Correct answer d. Streeter should produce 86,000 units as shown below.

Ending inventory	=	(72,000 x .5) - 8,000	=	28,000 units
Production	=	72,000 - 28,000 + (84,000 x .5)	=	<u>86,000 units</u>

53. Correct answer a. Rombus should produce 3,700 units as shown below.

$$\begin{aligned}
 \text{Production} &= \text{Sales} - \text{Beg. Inventory} + \text{Ending inventory} \\
 &= 4,000 - 900 + 600 \\
 &= \underline{3,700 \text{ units}}
 \end{aligned}$$

54. Correct answer c. The cost of one laminated putter head is \$52 calculated as follows.

Production	=	8,200 – 300 + 100	=	8,000 forged units
Direct labor	=	8,000 x .25 hrs.	=	2,000 hours for forged units
	=	2,000 x 1.0 hrs.	=	2,000 hours for laminated units
Variable O/H/hr.	=	\$25,000 ÷ 4,000 hrs.	=	\$6.25/hr.
Fixed O/H/hr.	=	\$15,000 ÷ 4,000 hrs.	=	\$3.75/hr.

Laminated putter head cost:	Steel	\$ 5.00
	Copper	15.00
	Direct labor	22.00
	Variable overhead	6.25
	Fixed overhead	<u>3.75</u>
	Total cost	<u>\$52.00</u>

55. Correct answer c. The units to be purchased in February total 6,100 units as shown below.

$$\begin{aligned}
 \text{February unit sales} &= (\$66,000 + \$44,000) \div \$20 = 5,500 \text{ units} \\
 \text{March unit sales} &= \$150,000 \div \$20 = 7,500 \text{ units} \\
 \text{February purchase} &= (5,500 \times .7) + (7,500 \times .3) = \underline{6,100 \text{ units}}
 \end{aligned}$$

56. Correct answer b. Stevens should purchase \$675,000 of Geo and \$300,000 of Clio.

Production components	=	20,000 first period + (20,000 x .25) second period = 25,000
Pounds of Geo	=	(25,000 x 2 lbs.) – 5,000 inventory = 45,000 lbs.
Cost of Geo	=	45,000 x \$15 = <u>\$675,000</u>
Pounds of Clio	=	(25,000 x 1.5 lbs.) – 7,500 inventory = 30,000 lbs.
Cost of Clio	=	30,000 x \$10 = <u>\$300,000</u>

57. Correct answer d. The amount that should be budgeted for direct labor is \$105,000.

Cost of production	=	\$400,000 - \$10,000 + \$25,000	=	\$415,000
Cost of Direct labor + O/H	=	\$415,000 - \$100,000 material	=	\$315,000
Cost of Direct labor	=	\$315,000 ÷ 3*	=	<u>\$105,000</u>

\*Overhead = 2 x direct labor



58. Correct answer d. McFadden's expected shipping costs total \$20,800 as shown below.

$$\begin{aligned}\text{Shipping costs} &= (9,600 \text{ lbs.} \times \$0.50/\text{lb.}) + \$16,000 \text{ fixed cost} \\ &= \underline{\$20,800}\end{aligned}$$

59. Correct answer a. Swan needs to purchase 85,000 yards of fabric as shown below.

$$\begin{aligned}\text{Sales} - \text{Ending Inventory} + \text{Beginning Inventory} &= \\ 90,000 - 25,000 + 20,000 &= \underline{85,000 \text{ yards}}\end{aligned}$$

60. Correct answer a. Manoli should purchase goods totaling \$40,820 as shown below.

$$\begin{array}{rcll}\text{November:} & \$58,000 \times .65 & = & \\ & \$37,700 \times .70 & = & \$26,390 \\ \text{December:} & \$74,000 \times .65 & = & \\ & \$48,100 \times .30 & = & \underline{\$14,430} \\ & \text{Total purchases} & & \underline{\$40,820}\end{array}$$

61. Correct answer c. The company should purchase 8,700 pounds of material as shown below.

$$\begin{aligned}\text{Units to be completed} &= 2,000 - 250 + 325 = 2,075 \\ \text{Pounds required} &= 2,075 \text{ units} \times 4 \text{ lbs.} = 8,300 \\ \text{Pounds purchased} &= 8,300 - 400 + 800 = \underline{8,700}\end{aligned}$$

62. Correct answer d. The number of shoes to be purchased is 404,000 as shown below.

$$\begin{aligned}\text{Dolls to be completed} &= 200,000 - 12,000 + 15,000 = 203,000 \\ \text{Shoes needed} &= 203,000 \times 2 = 406,000 \\ \text{Shoes purchased} &= 406,000 - 20,000 + 18,000 = \underline{404,000}\end{aligned}$$

63. Correct answer c. The budget for Maker's July purchases is \$364,500 as shown below.

$$\begin{array}{rcll}\text{July:} & \$600,000 \times .60 & = & \\ & \$360,000 \times .85 & = & \$306,000 \\ \text{August:} & \$650,000 \times .60 & = & \\ & \$390,000 \times .15 & = & \underline{58,500} \\ & \text{Total purchases} & & \underline{\$364,500}\end{array}$$

64. Correct answer d. The statement would include company-paid benefits and payroll taxes. Employee wages and salaries are generally associated with the goods or services produced or with administrative costs. Employee-paid taxes are not related to employee benefits, only those taxes paid by the company.

65. Correct answer b. Beginning finished goods inventory would have been produced in a prior period and, therefore, should not be included on a projected schedule of cost of goods manufactured.

66. Correct answer d. Freight charges paid for the delivery of raw materials re generally associated with the cost of making a product and not included as part of overhead.

67. Correct answer a. Valley's predetermined overhead application rate is \$2.09.

$$\begin{aligned} & (\text{Indirect material} + \text{Indirect labor} + \text{Utilities}) \div \text{Production} \\ & (\$1,000 + \$10,000 + \$12,000) \div 11,000 = \underline{\underline{\$2.09}} \end{aligned}$$

68. Correct answer b. Scurry's cost of goods sold is \$600,000 as shown below.

$$\begin{aligned} & \text{Beg. finished goods} + \text{Cost of goods manufactured} - \text{Ending finished goods} \\ & \$100,000 + \$700,000 - \$200,000 = \underline{\underline{\$600,000}} \end{aligned}$$

69. Correct answer a. Tut's selling and administrative costs total \$652,760 as shown below.

Variable costs	$(\$18.60 \times .90) \times \$24,000$	=	\$401,760
Step costs	$(\$85,000 \div 17) \times 15$	=	75,000
Fixed costs		=	<u>176,000</u>
Total costs			<u>\$652,760</u>

70. Correct answer c. Granite's accounts receivable balance will be \$146,000 as shown below.

$$\begin{aligned} \text{May A/R balance} &= 15\% \text{ of March} + 40\% \text{ of April} \\ &= .15 (\$280,000) + .4 (\$260,000) \\ &= \underline{\underline{\$146,000}} \end{aligned}$$

71. Correct answer a. The employee taxes withheld and due to be remitted in July is the only item listed that actually affects cash flows in the month of July.

72. Correct answer c. The expected cash collections for Brown total \$108,000.

$$\begin{aligned} \text{Cash collections} &= \$8,000 + [(\$72,000 \div .6) \times .5] + (\$100,000 \times .4) \\ &= \$8,000 + \$60,000 + \$40,000 \\ &= \underline{\underline{\$108,000}} \end{aligned}$$

73. Correct answer c. Cooper's cash balance will increase \$112,500 as shown below.

Opening balance	\$100,000	February A/R	+800,000
A/R balance	+300,000	February A/P	- 425,000
A/P balance	- 500,000	February Other	- 175,000
January A/R	+700,000	March A/R*	+200,000
January A/P	- 350,000	March A/P**	- 112,500
January Other	- 150,000	March Other	<u>- 175,000</u>
		Cash balance	\$212,500
		Less opening	<u>100,000</u>
		Cash increase	<u>\$112,500</u>

\* \$500,000 x .4

\*\* \$225,000 x .5

74. Correct answer b. Planned net accounts receivable balance as of December 31 is \$294,000:

November (\$480,000 x .8 x .25) = \$96,000  
December (\$450,000 x .8 x .55) = \$198,000  
Total AR as of December \$294,000

75. Correct answer a. Wallstead's April cash collections total \$343,000 as shown below.

March discounted collections	=	(\$370,000 x .5) x .98	=	\$181,300
March undiscounted collections	=	\$370,000 x .3	=	111,000
February collections	=	\$340,000 x .15	=	<u>51,000</u>
Total collections				<u>\$343,000</u>

76. Correct answer a. Tip-Top's first quarter collections total \$811,000 as shown below.

Collectible sales first quarter	=	\$855,000 x .95	=	\$812,250
Daily collectible sales	=	\$812,250 ÷ 90 days	=	\$9,025
40 days of sales	=	\$9,025 x 40 days	=	\$361,000
Total collections	=	\$361,000 + \$450,000*	=	<u>\$811,000</u>

\*Net A/R from last quarter

77. Correct answer b. Monroe will need to borrow \$70,000 as shown below.

	<u>January</u>	<u>February</u>
Opening balance	\$ 30,000	\$ 0
Plus collections	200,000	200,000
Less purchases*	210,000	240,000
Less other expenses	<u>20,000</u>	<u>20,000</u>
Closing balance	\$ 0	\$-60,000

Required borrowing = \$60,000 + \$10,000 = \$70,000

\*January = Feb. sales \$350,000 x .6

February = March sales \$400,000 x .6

78. Correct answer c. Prudent's May cash receipts budget is \$735,000 as shown below.

Collections from April sales	=	(\$700,000 x .8) x .25	=	\$140,000
May cash sales	=	\$750,000 x .2	=	150,000
May A/R collections	=	(\$750,000 x .8) x .70	=	420,000
Sale of equipment				<u>25,000</u>
Total cash collections				<u>\$735,000</u>

79. Correct answer b. ANNCO's January cash collections total \$174,500 as shown below.

November sales collections	=		=	\$ 49,500
December sales collections	=	$(\$162,000 \div .9) \times .6$	=	108,000
January sales collections	=	$\$170,000 \times .1$	=	<u>17,000</u>
Total cash collections				<u>\$174,500</u>

80. Correct answer c. Brooke's February cash balance is \$232,500 as shown below.

	January		February
Opening balance	\$200,000		\$ 55,000
Accounts receivable	300,000 (Dec.)		420,000 (700,000 x .6)
Accounts receivable	280,000 (700,000 x .4)		320,000 (800,000 x .4)
Accounts payable	400,000 (Dec.)		175,000 (350,000 x .5)
Accounts payable	175,000 (350,000 x .5)		212,500 (425,000 x .5)
Other expense	<u>150,000</u>		<u>175,000</u>
Cash balance	\$ 55,000		<u>\$232,500</u>

81. Correct answer c. Health Foods' March cash receipts total \$242,000 as shown below.

March cash sales	=	$\$250,000 \times .6$	=	\$150,000
March sales collections	=	$(\$250,000 \times .4 \times .5)$	=	50,000
February sales collections	=	$(\$240,000 \times .4 \times .3)$	=	28,800
January sales collections	=	$(\$220,000 \times .4 \times .15)$	=	<u>13,200</u>
Total cash collections				<u>\$242,000</u>

82. Correct answer c. The company will need to borrow \$11,000 in January as shown below.

Opening balance	\$ 24,900	
January collections	86,000	(\$32,000 + \$54,000)
January expenses	<u>106,500</u>	
Closing balance	\$ 4,400	
Less minimum balance	<u>15,000</u>	
Borrowing need	\$ 10,600	rounded to <u>\$11,000</u>

83. Correct answer b. Johnsen's budgeted cash receipts total \$684,500 as shown below.

September cash sales	=	$(\$800,000 \times .3)$	=	\$240,000
September sales collections	=	$(\$800,000 \times .7 \times .2)$	=	112,000
August sales collections	=	$(\$650,000 \times .7 \times .5)$	=	227,500
July sales collections	=	$(\$600,000 \times .7 \times .25)$	=	<u>105,000</u>
Total cash collections				<u>\$684,500</u>

84. Correct answer c. Mountain Mule will need to borrow \$10,000 as shown below.

	January	February	March
Opening balance	\$85,000	\$60,000	\$ 0
Collections	---	---	60,000
Purchases	---	35,000	40,000
Operating expenses	<u>25,000</u>	<u>25,000</u>	<u>25,000</u>
Closing balance	\$60,000	\$ 0	\$ -5,000

With required balance of \$5,000 and negative cash of \$5,000, need to borrow \$10,000.

## Section B: Performance Management

85. Correct answer b. A static budget is based on the level of output planned at the start of the budget period and does not change no matter what the level of actual output. Comparison of actual activities to static budget levels is difficult and often misleading.
86. Correct answer b. If a company experiences an increase in sales volume, the actual revenue will be greater than the master budget revenue (favorable variance) and the actual costs will be greater than the master budget costs (unfavorable variances).
87. Correct answer b. The use of a standard cost system has several benefits but they are generally based on quantitative factors and not qualitative characteristics.
88. Correct answer a. For flexible budgets, variable costs are given per unit so that comparisons can be readily made at various levels of output. Fixed costs are expected to remain the same over the relevant range and, therefore, are given in total.
89. Correct answer d. Flexible budgets are preferable for both planning purposes and performance reporting as the flexible budget can be based on the actual amount of output and then compared to the actual revenue and costs.
90. Correct answer c. The sales-volume variance is \$16,000 favorable as shown below.

	<u>Flexible Budget</u>	<u>Static Budget</u>
Units	100,000	80,000
Sales dollars	\$200,000	\$160,000
Variable costs	120,000	96,000
Fixed costs	<u>40,000</u>	<u>40,000</u>
Operating income	<u>\$ 40,000</u>	<u>\$ 24,000</u>

Sales volume variance = \$40,000 - \$24,000 = \$16,000 F

91. Correct answer c. Efficiency variances are sometimes referred to as usage variances and measure quantity used. Material usage and labor efficiency (usage) are likely to be related, e.g., poor quality material will likely cause excess usage and require additional labor.
92. Correct answer d. A static budget is based on projected output while a flexible budget is based on actual output. As a result, the actual cost of the actual output can be compared to the budgeted cost for the actual output.
93. Correct answer c. The use of management by exception reporting requires the same amount of advanced planning as any other type of variance reporting. The time savings of management by exception arises in potentially investigating fewer variances.
94. Correct answer b. The standard variable overhead rate per direct labor hour is \$4.00 calculated as follows.

Standard hours/unit	=	10,000 hours ÷ 5,000 units	
	=	2 hours/unit	
Standard hours for output	=	4,500 units x 2 hours	
	=	9,000 hours	
VOH efficiency variance: (9,000 – 9,600) x R	=	-\$2,400	
	-600R	=	-\$2,400
	R	=	<u>\$4.00</u>

95. Correct answer d. The actual wage rate per hour is \$7.50 and the actual hours worked equals 38 as shown below.

Actual hours:	(X – 40) x \$7	=	-14
	X – 40	=	-2
	X	=	<u>38 hours</u>
Wage rate:	(X - \$7) x 38	=	19
	X - \$7	=	.50
	X	=	<u>\$7.50</u>

96. Correct answer a. If variable overhead is applied on the basis of direct labor hours and overhead spending is \$25,000 less than expected, it means that labor was very efficient, e.g., highly skilled labor.
97. Correct answer c. With a single supplier, the purchasing manager should not be held responsible for the price variance. The standard material price should be increased.
98. Correct answer c. The conclusion regarding the operating income is correct but the variance information could be more specific, e.g., lower sales, higher variable cost, and higher fixed costs all contributed to the operating income variance.

99. Correct answer b. The use of lower-skilled labor is not likely to lead to a favorable direct labor efficiency variance but is more likely to cause this variance to be unfavorable. Lower-skilled labor could also affect the material quantity variance negatively.
100. Correct answer b. The material variance should be investigated since it is \$11,000 which is greater than 10% of the budget (\$100,000 x .1). The direct labor variance is \$4,000 which is less than 10% of budget (\$50,000 x .1) so it would not be investigated under the company policy.
101. Correct answer c. A favorable direct labor price variance could indicate that lower-skilled labor is being used that what was planned. This could lead to unfavorable labor use and material usage variances that more than offset the favorable price variance.
102. Correct answer d. Frisco's purchase price variance is \$10,800 F calculated as follows.

$$\begin{array}{lclcl}
 \text{Price per unit purchased:} & \$583,200 \div 108,000 & = & \$5.40 \\
 \text{Standard price per unit:} & \$16.50 \div 3 & = & \$5.50 \\
 \text{Purchase price variance} & (\$5.50 - \$5.40) \times 108,000 & = & \underline{\$10,800 \text{ F}}
 \end{array}$$

103. Correct answer b. SBL's material price variance is \$300 F as shown below.

$$\begin{array}{lcl}
 \text{Price variance} & = & (\text{Actual price} - \text{Standard price}) \times \text{Actual quantity} \\
 & = & (\$7.90 - \$8.00) \times 3,000 \\
 & = & \underline{\$300 \text{ F}}
 \end{array}$$

104. Correct answer c. The raw material price variance (purchase price variance) is \$10,000 U as shown below.

$$\begin{array}{lcl}
 \text{Price variance} & = & (\text{Actual price} - \text{Standard price}) \times \text{Actual quantity} \\
 & = & (\$2.02 - \$2.00) \times 500,000 \\
 & = & \underline{\$10,000 \text{ U}}
 \end{array}$$

105. Correct answer d. The actual direct labor hours used by Lee Manufacturing is 12,100 calculated as follows.

$$\begin{array}{lcl}
 \text{Efficiency variance: } (\text{Actual quantity} - \text{Standard quantity}) \times \text{Standard price} & & \\
 \text{Standard quantity} & = & 6,000 \text{ units} \times 2 \text{ hours per unit} \\
 & = & 12,000 \text{ hours} \\
 \text{Actual hours:} & (X - 12,000) \times \$15 = & \$1,500 \\
 & X - 12,000 = & 100 \\
 & X = & \underline{12,100}
 \end{array}$$

106. Correct answer b. Douglas' direct material variance is \$2,000 U as shown below.

$$\begin{aligned}\text{Material standard price/unit} &= \$15,000 \div 10,000 \\ &= \$1.50 \\ \text{Material variance} &= (\$1.50 \times 12,000) - \$20,000 \\ &= \$18,000 - \$20,000 \\ &= \underline{\underline{\$2,000 \text{ U}}}\end{aligned}$$

107. Correct answer a. The rate variance will show how the price paid for direct labor varies from the standard price. The efficiency variance shows how the number of direct labor hours used varies from the standard number of direct labor hours.
108. Correct answer b. Employees in the Shipping Department have nothing to do with the amount of material used in the production process. All of the other answers could affect the quantity of material used.

109. Correct answer c. The company had a favorable labor price of \$33,000 as shown below.

$$\begin{aligned}X - \$18,000 &= \$15,000 \\ X &= \underline{\underline{\$33,000 \text{ F}}}\end{aligned}$$

110. Correct answer d. Cordell's production volume variance is \$30,000 U as shown below.

$$\begin{aligned}\text{Standard fixed cost per unit} &= \$600,000 \div 200,000 \\ &= \$3 \text{ per unit} \\ \text{Product volume variance} &= (190,000 - 200,000) \times \$3 \\ &= \underline{\underline{\$30,000 \text{ U}}}\end{aligned}$$

111. Correct answer b. If variable overhead is applied on the basis of direct labor hours and the number of direct labor hours used is favorable, then the variable overhead efficiency (usage) variance must also be favorable.
112. Correct answer b. Harper's total overhead spending variance is \$115,000 favorable calculated as follows.

$$\begin{aligned}\text{Variable overhead} &= \text{Actual total overhead} - \text{Fixed overhead} \\ &= \$1,600,000 - \$1,500,000 \\ &= \$100,000 \\ \text{Spending variance} &= (\text{Input} \times \text{Standard rate}) - \text{Actual variable overhead} \\ &= (430,000 \times \$0.50) - \$100,000 \\ &= \underline{\underline{\$115,000 \text{ F}}}\end{aligned}$$



113. Correct answer d. JoyT's variable overhead spending variance is \$22,000 favorable calculated as follows.

$$\begin{aligned}\text{Spending variance} &= (\text{Input} \times \text{Standard rate}) - \text{Actual variable overhead} \\ &= (10,300 \times \$60^*) - \$596,000 \\ &= \underline{\$22,000 \text{ F}} \\ &*\$600,000 \div 10,000\end{aligned}$$

114. Correct answer d. A fixed overhead volume variance is dependent on quantity, above or below the planned quantity. An unfavorable volume variance means that production was less than planned.
115. Correct answer d. The spending variance is the difference between actual and budgeted rates times the actual base input.
116. Correct answer d. All the departments bear some responsibility for the usage variance: Marketing because the rush order was accepted, Purchasing because of the delay in ordering the materials, and Production for bypassing the normal inspection process.
117. Correct answer d. The materials quantity variance does reflect the fact that 1,000 units were produced rather than the planned 900 units. By indicating the standard usage is 3,000 (3 per unit), the standard usage for the actual output is compared with the actual material usage.
118. Correct answer b. Unfavorable material usage variances are generally caused by inferior materials or lower-skilled workers. Unfavorable usage variances shown that more material than the standard quantity was used; this is not likely to be caused by lower-than-planned production.
119. Correct answer b. A sales team is generally only accountable for sales dollars; this type of responsibility center is, therefore, a revenue center.
120. Correct answer d. If the Sales Department operates as a profit center and accepts a rush order, it should incur the extra cost of the rush order. The overtime required should not be charged to the Production Department as the manager would then be inclined to reject the order as not beneficial to the department goals.
121. Correct answer b. If corporate and support costs are being allocated to divisions and departments, there is very little incentive for central managers to control costs no matter how much pressure they receive from profit-center managers.
122. Correct answer b. The use of budgeted rates and standard hours ensures that all departments know what rates will be charged and how many hours will be charged. This allows usage to be properly planned and encourages service providers to be efficient.

123. Correct answer c. A transfer price is the price one business unit charges for a product or service supplied to another business unit of the same organization. This pricing structure does not apply to external customers.
124. Correct answer c. The management of the two divisions should negotiate the transfer price. Negotiation is most likely to ensure that both managers are satisfied with the resultant price.
125. Correct answer d. A market-based transfer price will motivate the manager of the selling division to be efficient in order to earn the greatest profit or contribution margin.
126. Correct answer c. Selling the product internally allows the division to avoid paying sales commissions and incurring the cost of collections thus justifying a transfer price that is lower than the market price. Other costs such as promotion and advertising might also be avoided.
127. Correct answer c. Dual pricing promotes goal congruence, e.g., the selling division receives full cost plus markup price which allows the division to earn a profit while the buying division pays the market price and is no worse off than if purchasing from an outside vendor. The organization as a whole is unaffected by the internal transfers.
128. Correct answer a. Since the Fabrication Division has excess capacity, the minimum price to be charged would be \$21 to cover the variable manufacturing costs. The selling and distribution costs will be avoided, and the fixed costs will be incurred whether or not the 4,500 units are sold to the Electronic Assembly Division.
129. Correct answer d. As long as Green Division has excess capacity and does not have to turn down any sales at a 60% markup, Green will transfer product to Red Division at cost plus 10%.
130. Correct answer d. The company should use all the categories of performance measurement to ensure that it remains competitive and profitable.
131. Correct answer c. Earnings per share depend not only on net income but also on the number of shares outstanding. Managers generally have no control over the number of shares issued and should not be measured on earnings per share.
132. Correct answer d. Measuring performance on the total dollars processed would lead to paying attention to those claims with the greatest dollar value and ignoring smaller claims, not a good process for customer satisfaction.
133. Correct answer b. Cooper is expected to fill and deliver orders accurately at the least cost to the company. Measuring his performance on the percentage of on-time and accurate orders plus the cost to fill and deliver orders would result in Cooper pursuing the proper goals.

134. Correct answer b. Morgan is responsible for assisting customers accurately and quickly. The number of calls received regarding a new product should be the concern of the product developers; this might affect Morgan's staff's ability to shorten customer "hold" time but is not her responsibility.
135. Correct answer d. The Repair and Maintenance Department is expected to keep the production equipment in good working order to facilitate keyboard production. If the production departments are satisfied, it is a good indication that Repair and Maintenance is doing a good job.
136. Correct answer c. A budgeted rate should be established so that all departments know in advance how much they will be charged for actual usage. Using this rate also encourages cost control in the Computer Department.
137. Correct answer d. In order to increase residual income, the expected return on the new project must be higher than the cost of capital (required rate of return) but lower than the current return on investment.
138. Correct answer b. All projects with a projected ROI that is greater than the required rate of return (cost of capital) would add value to KHD Industries. Without capital restrictions, Projects B, C, and D should be selected.
139. Correct answer b. Division B has the highest actual return on investment and 8% return on sales, the second highest return. The division with the highest return on sales actually failed to meet its target return on investment.
140. Correct answer b. Since the system was constructed on the basis of the anticipated number of hours of usage, it is reasonable to base the allocation on the same measure.
141. Correct answer d. As long as the project return is above the cost of capital, the manager of the Construction Equipment Division will accept the project. The manager of the Household Appliances Division, measured on the basis of ROI, will not accept a projected rate of return of 14% when the current ROI of the division is 16%.
142. Correct answer d. Using residual income as a performance measure means that a business unit should continue to expand as long as projects earn a return in excess of the required rate of return.
143. Correct answer d. To focus on both long-term and short-term objectives, a variety of performance measures should be used. Using a single measure such as ROI can cause negative actions such as rejecting projects that meet the hurdle but might adversely affect the division's rate of return.
144. Correct answer a. The four perspectives of the balanced scorecard include options b, c, and d plus the customer perspective. Competitor business strategies are not included.

145. Correct answer d. The balanced scorecard is not based on scientific management theory but is a flexible means of translating a company's strategy into a comprehensive set of performance measures.

### **Section C: Cost Management**

146. Correct answer b. The variable costs per flight would include fuel, food service, and landing fees. Other costs mentioned such as salaries, depreciation, marketing, and communications would not vary with individual flights.
147. Correct answer b. Sales commissions on cars would be part of the cost of the car dealership, not the manufacturer. Options a and d are direct material costs while option c would be charged to manufacturing overhead.
148. Correct answer a. Cost A appears to be semi-variable or mixed as it varies between quantities but does not vary consistently so a portion must be fixed and a portion variable. Cost B is fixed in the relevant range (14,000 units) and Cost C varies consistently for all quantities and therefore must be variable.
149. Correct answer b. The variable cost per unit would remain the same as the volume decreases. All other costs listed would change with a change in volume.
150. Correct answer d. Cost A is variable as it is consistently \$1.42 per unit for each quantity. Cost B is semi-variable as it varies between quantities but not consistently so a portion must be fixed. Cost C is fixed as it is the same for all quantities. Cost D, like Cost A, is variable at \$1.63 per unit.
151. Correct answer b. The cost of electricity could be semi-variable with a fixed monthly charge plus a per unit charge for usage. All other costs listed are either fixed (a and d) or variable (c).
152. Correct answer b. The variable marketing cost would include the 8% sales commission plus the ½% manager's incentive,  $8.5\% \times \$100,000 = \$8,500$ .
153. Correct answer a. The allocation of indirect costs to cost objects would increase total costs identified with products rather than reduce total costs identified.
154. Correct answer a. The relevant range is the band of activity or volume over which certain cost relationships such as fixed costs remain valid.
155. Correct answer b. If a cost is strictly variable within the relevant range, the unit cost will be consistently the same and will not increase or decrease with a change in volume.

156. Correct answer c. One of the basic assumptions of cost behavior is that a cost can be approximated by a linear cost function within the relevant range. A linear cost function is one in which the graph of total costs versus the level of activity is a straight line.
157. Correct answer b. The variable per unit component of Lar's electricity cost will remain constant over the relevant range and not change with an increase or decrease in volume.
158. Correct answer c. Kimber's total manufacturing cost will be \$615,000 as shown below.

Variable cost:	9,000 units x (\$20 + \$25 + \$10)	=	\$495,000
Fixed cost:	8,000 units x \$15	=	<u>120,000</u>
	Total manufacturing cost		<u>\$615,000</u>

159. Correct answer c. Plunkett's product costs were \$656,100 and the period costs were \$493,000, as shown below.

	<u>Product Costs</u>		<u>Period Costs</u>
Direct material	\$ 56,000	Variable selling	\$108,400
Direct labor	179,100	Fixed selling	121,000
Variable overhead	154,000	Administrative	235,900
Fixed overhead	<u>267,000</u>	Fire loss	<u>27,700</u>
Total product costs	<u>\$656,100</u>	Total period costs	<u>\$493,000</u>

160. Correct answer c. The only difference between actual costing and normal costing is that actual costing uses actual indirect-cost rates while normal costing uses budgeted indirect cost rates. Therefore, normal costing does not improve the accuracy of job or product costing.
161. Correct answer d. The budgeted indirect cost rate would be \$48 as shown below.

$$(\$5,000,000 + \$7,000,000) \div 250,000 = \underline{\$48 \text{ per hour}}$$

162. Correct answer b. Merlene's operating income is \$22,500 calculated as follows.

Sales (750 x \$200)	\$150,000
COGS (750 x \$90)	<u>67,500</u>
Contribution	82,500
Fixed period costs	15,000
Selling & administrative	<u>45,000</u>
Operating income	<u>\$ 22,500</u>

163. Correct answer d. The cost applied to each T-shirt is \$.8689 calculated as follows.

$$\begin{aligned}
 \text{Total seconds used} &= (50,000 + 30,000) (40) + (20,000 \times 20) \\
 &= 3,600,000 \\
 \text{Cost per second} &= \$78,200 \div 3,600,000 \\
 &= \$0.0217222 \\
 \text{Cost per T-shirt} &= 40 \times \$0.0217222 \\
 &= \underline{\underline{\$.868888}}
 \end{aligned}$$

164. Correct answer a. Dremmon's operating income was \$21,500 calculated as follows.

Sales (750 x \$200)	\$150,000
COGS [750 x (\$90 + \$20)]	82,500
Underapplied fixed cost (50 x \$20)	1,000
Selling & administrative	<u>45,000</u>
Operating income	<u>\$ 21,500</u>

165. Correct answer b. Chassen's finished goods inventory would total \$70,000 as absorption costing includes both variable (\$5.00) and fixed (\$2.00) manufacturing costs (\$7.00 x 10,000 units).

166. Correct answer c. Weisman's operating income using absorption costing was \$15,300 calculated as follows.

Sales (900 x \$100)	\$90,000
COGS [900 x (\$30 + \$20 + \$10 + \$5)]	58,500
Variable selling (900 x \$12)	10,800
Fixed selling	3,600
Fixed administrative	<u>1,800</u>
Operating income	<u>\$15,300</u>

167. Correct answer b. The difference between variable and absorption costing is the treatment of fixed manufacturing overhead. All fixed manufacturing overhead is expensed during the period using variable resulting in lower operating income. The difference is the fixed manufacturing overhead that is included in inventory when using absorption costing.
168. Correct answer a. Mill's absorption costing income would be \$2,400 lower than variable income because 800 units that had been previously inventoried were sold. These 800 units times \$3.00 of fixed manufacturing overhead unit cost accounts for the \$2,400.
169. Correct answer a. Absorption costing would include factory insurance and direct labor as product costs, expensing only shipping costs as period costs. Variable costing would include only direct labor as product cost and expense the other two costs.

170. Correct answer c. Fixed manufacturing overhead is applied to each product at the rate of \$20 ( $\$100,000 \div 5,000$ ). If Troughton manufactures an additional 1,500 units, fixed manufacturing overhead would be over-applied by \$30,000 ( $1,500 \times \$20$ ). As stated in the problem, the company would reduce the cost of goods sold by the amount of over-applied overhead, thus increasing operating income by \$30,000 to the desired \$50,000.
171. Correct answer a. Variable costing, also call direct costing, includes all variable manufacturing costs in inventory, e.g., direct materials, direct labor, and variable overhead.
172. Correct answer d. Xylon's internal income figures would vary closely with sales because fixed overhead costs are treated as period costs when using variable costing. Under absorption costing, all overhead costs are attached to the units produced; there, some fixed costs are inventoried for those units produced but not sold.
173. Correct answer a. The value of Bethany's inventory is \$5,000,000, equal to the variable manufacturing cost.
174. Correct answer c. Donaldson's operating income based on variable costing is \$14,800 calculated as follows.

Sales ( $900 \times \$100$ )	\$90,000
COGS [ $900 \times (\$30 + \$20 + \$10)$ ]	54,000
Fixed manufacturing ( $1,000 \times \$5$ )	5,000
Variable selling ( $900 \times \$12$ )	10,800
Fixed selling	3,600
Fixed administrative	<u>1,800</u>
Operating income	<u>\$14,800</u>

175. Correct answer d. Robinson produced 1,250 units based on the difference between the variable costing income and absorption costing income.

Income difference	$\$9,500 - \$9,125$	=	\$375
Units of fixed O/H	$\$375 \div \$1.50$	=	250 inventory units
Units produced	$1,000 \text{ sales} + 250 \text{ inventory}$	=	<u>1,250 units</u>

176. Correct answer a. Using variable costing, fixed overhead is treated as a period cost rather than a product costs that becomes part of inventory. It can be argued that this is more appropriate as the fixed costs of equipment, space, etc. should not be inventoried but expensed annually.
177. Correct answer d. Because fixed manufacturing overhead is included in inventory, finished goods inventory will be higher under absorption costing than when using variable costing where fixed manufacturing is expensed.
178. Correct answer d. The allocation of common costs to joint products is for financial reporting purposes, basically inventory costing and computing the cost of goods sold.

179. Correct answer c. By-products have a lower sales value than do joint or main products.
180. Correct answer a. Joint products generally have a higher sales value than by-products.
181. Correct answer c. Separable production cost method is not a method for allocating joint costs.
182. Correct answer a. The total costs for producing Giant are \$5,600 calculated as follows.

Joint cost allocation:	<u>Giant</u>	<u>Mini</u>	<u>Total</u>
Sales value	\$10,200	\$800	\$11,000
Less further processing	<u>1,000</u>	<u>--</u>	<u>1,000</u>
Net realizable value	\$ 9,200	\$800	\$10,000
% allocation	92%	8%	
Giant joint cost:	\$5,000 x 92%	\$4,600	
Cost to process further	<u>1,000</u>		
Total cost		<u>\$5,600</u>	

183. Correct answer a. The per gallon cost of Big is \$5.63 calculated as follows.

Joint cost allocation:	<u>Big</u>	<u>Mini</u>	<u>Total</u>
Sales value	\$7,200	\$800	\$8,000
% allocation	90%	10%	
Cost per unit of Big	90% x \$5,000 =	\$4,500	
	\$4,500 ÷ 800 =	<u>\$5.625 /unit</u>	

184. Correct answer d. The joint cost per unit of Product C is \$3.78 calculated as follows.

Net realizable value:			
Product A	20,000 x (\$5.00 - \$.70)	=	\$ 86,000
Product B	30,000 x (\$6.00 - \$3.00)	=	90,000
Product C	50,000 x (\$7.00 - \$1.72)	=	<u>264,000</u>
Total			\$440,000
Product C allocation	\$264,000 ÷ \$440,000	=	60%
	\$315,000 x 60%	=	\$189,000
Unit joint cost	\$189,000 ÷ 50,000	=	<u>\$3.78</u>

185. Correct answer a. If Zinten is produced, income would increase by \$2,000 calculated as follows.

Change in income:	=	Xylo – Zinten sales differential – Additional cost
	=	[ 2,000 x (\$15 - \$12)] - \$4,000
	=	\$6,000 - \$4,000
	=	<u>\$2,000</u>



186. Correct answer c. Abnormal spoilage is spoilage that should not arise under efficient production conditions and is written off as a loss in the period in which it is detected. Therefore, there would be no effect on the unit manufacturing cost of Job 532 but operating income would decrease.

187. Correct answer b. Baldwin's annual budgeted overhead is \$600,000 calculated as follows.

Overhead cost per unit	$\$4.30 - (\$1,000 \div 1,000) - (\$1,500 \div 1,000)$	=	\$1.80
Overhead hours per unit	$450 \div 1,000$	=	.45 hr.
Overhead budget per unit	$\$1.80 \div .45$	=	\$4.00
Total overhead budget	$150,000 \times \$4.00$	=	<u>\$600,000</u>

188. Correct answer b. Total overhead applied to Job #231 is \$303 as shown below.

Tooling overhead/hr.	$\$8,625 \div 460 \text{ hours}$	=	\$18.75
Fabricating overhead/hr.	$\$16,120 \div 620 \text{ hours}$	=	\$26.00
Job #231 overhead	$(\$18.75 \times 12) + (\$20.00 \times 3)$	=	<u>\$303.00</u>

189. Correct answer d. The weighted average inventory cost per unit completed in October is \$4.00 calculated as follows.

Equivalent units:	Units transferred out	27,000
	Ending inventory (3,000 x .5)	<u>1,500</u>
	Total	28,500
Cost incurred:	$\$4,300 + \$39,700 + \$70,000$	= \$114,000
Unit cost:	$\$114,000 \div 28,500$	= <u>\$4.00/unit</u>

190. Correct answer c. The total raw material cost in ending inventory is \$60 calculated as follows. Since material is added at the beginning of the manufacturing process, all units are 100% complete with regard to material.

Material cost	=	\$120 + \$540
	=	\$660
Unit cost	=	$\$660 \div 110 \text{ units}$
	=	\$6.00
EI raw material	=	$\$6.00 \times 10 \text{ units}$
	=	<u>\$60</u>

191. Correct answer d. Normal spoilage is allocated to the units produced during the period while abnormal spoilage is treated as a period cost.

192. Correct answer b. Normal spoilage should be part of the normal cost of manufacturing goods and should be charged to good units produced. Abnormal spoilage, not a part of normal operations, should be expensed as a period cost when detected.

193. Correct answer b. Southwood would transfer 16,000 units to finished goods inventory at a cost of \$154,850 as shown below.

$$\begin{aligned}
 \text{Inventory cost} &= \text{Cost of good units} + \text{Cost of normal spoilage} \\
 &= [16,000 \times (\$3.50 + \$6.00)] + \{300 \times (\$3.50 + \$6.00)\} \\
 &= \$152,000 + \$2,850 \\
 &= \underline{\$154,850}
 \end{aligned}$$

194. Correct answer a. The 65,000 units that were started and completed during the month represent the equivalent units for Material B. Material B was previously added to the beginning work-in-process and the ending work-in-process had not yet reached 80% where Material B would have been added.

195. Correct answer c. Oster's October manufacturing cost should be assigned \$1,155,000 to production completed and \$235,000 to work-in-process inventory calculated as follows.

$$\begin{aligned}
 \text{Material at 100\%} &= (\$700,000 + \$40,000) \div (60,000 + 20,000) \\
 &= \$740,000 \div 80,000 \\
 &= \$9.25/\text{unit} \\
 \text{Equivalent conversion units} &= 60,000 + (20,000 \times .25) \\
 &= 65,000 \text{ units} \\
 \text{Conversion cost} &= (\$32,500 + \$617,500) \div 65,000 \\
 &= \$10/\text{unit} \\
 \text{Cost of production} &= 60,000 \times (\$9.25 + \$10) \\
 &= \underline{\$1,155,000} \\
 \text{Cost of work-in-process} &= (20,000 \times \$9.25) + (5,000 \times \$10) \\
 &= \underline{\$235,000}
 \end{aligned}$$

196. Correct answer d. The equivalent units used to assign material costs is 100,000 consisting of the 30,000 in beginning inventory and the 70,000 units started during the month. The equivalent units used to assign conversion costs is 82,000 consisting of 12,000 units (30,000 x 40%) in beginning inventory and the 70,000 units started during the month.

197. Correct answer b. The total conversion cost transferred to the next department is \$1,600 calculated as follows.

$$\begin{aligned}
 \text{Equivalent conversion units} &= 100 + (10 \times 40\%) \\
 &= 104 \text{ units} \\
 \text{Conversion costs} &= \$180 + \$1,484 \\
 &= \$1,664 \\
 \text{Unit conversion cost} &= \$1,664 \div 104 \\
 &= \$16 \\
 \text{Cost transferred} &= \$1,664 - (4 \times \$16)^* \\
 &= \underline{\$1,600}
 \end{aligned}$$

\*Ending work-in-process equivalent units

198. Correct answer d. Krause's equivalent units for conversion costs total 92 calculated as follows.

Beginning WIP Inventory:	20 units x (100% - 60%)	=	8 units
December units – Ending WIP:	90 units – [10 x (100% - 40%)]	=	84 units
Total			<u>92 units</u>

199. Correct answer a. Jones' equivalent units for conversion costs total 87,300 calculated as follows.

Units started in August (X):	=	10,000 + X – 8,000 = 90,000
	=	88,000 units
Plus Beginning WIP Inv.	=	10,000 x (100% - 75%)
	=	2,500 units
Less Ending WIP Inv.	=	8,000 x (100% - 60%)
	=	3,200 units
Total Equivalent Units	=	88,000 + 2,500 - 3,200
	=	<u>87,300 units</u>

200. Correct answer b. Waller's equivalent units for material in ending work-in-process inventory total 8,800 as shown below.

$$22,000 \text{ units} \times 40\% \text{ material} = \underline{8,800 \text{ units}}$$

201. Correct answer d. Robotics painting would be machine-based and would logically be allocated to products on the basis of machine hours. The other three options would more appropriately be allocated on the basis of direct labor or charged to overhead.
202. Correct answer c. Activity-based costing is an approach to costing that focuses on cost drivers. It uses these drivers to assign costs to products and services. As a result, a company would normally gain insight into the causes of cost.
203. Correct answer d. Using activity-based costing, the cost of materials is one of the costs that needs to be allocated based on the cost driver, e.g., the number of units used per product.
204. Correct answer b. Using activity-based costing, the cost to manufacture one ultrasound machine is \$264 calculated as follows.

Cost per engineering change:	$\$6,000 \div (2 + 1)$	=	\$2,000
Material handling per part:	$\$5,000 \div (400 + 600)$	=	\$5
Cost per product setup:	$\$3,000 \div (8 + 7)$	=	\$200
Ultrasound direct material ( $\$8,000 \div 100$ )			\$ 80
Ultrasound direct labor ( $\$12,000 \div 100$ )			120
Material handling [ $(600 \div 100) \times \$5$ ]			30
Engineering change ( $\$2,000 \div 100$ )			20
Setups [ $(\$200 \div 100) \times 7$ ]			<u>14</u>
Manufacturing cost			<u>\$264</u>

205. Correct answer c. The muffins are \$1,925 more profitable as shown below.

Cost of muffin delivery:	$[(150 \times 10) \div 60] \times \$20$	=	\$500
Cost of cheesecake delivery:	$[(85 \times 15) \div 60] \times \$20$	=	\$425
Muffin profit:	$\$53,000 - \$26,000 - \$500$	=	\$26,500
Cheesecake profit:	$\$46,000 - \$21,000 - \$425$	=	<u>24,575</u>
Profit difference			<u>\$ 1,925</u>

206. Correct answer a. The per unit overhead cost allocation of receiving costs for product A is \$3.75 as shown below.

Receiving costs per order:	$\$450,000 \div (50 + 150)$	=	\$2,250
Per unit of Product A:	$(50 \times \$2,250) \div 30,000$	=	<u>\$3.75</u>

207. Correct answer d. Activity-based costing generally uses a greater number of allocation bases or cost drivers and therefore results in more accurate costing.
208. Correct answer b. Since it is difficult to assign quantities and costs of items such as screws and glue to specific products, they are generally charged to factory overhead.
209. Correct answer d. Only in the situation where all overhead costs were expensed, e.g., zero inventory balances, would the reported net income be the same.
210. Correct answer c. Homogenous cost pools are those in which all of the costs have the same or similar cause-and-effect or benefits received relationship with the cost allocation base.
211. Correct answer b. The Tool Department overhead applied to Job #231 is \$197.50 calculated as follows.

Tooling overhead per hour:	$\$8,690 \div 440 \text{ hrs.}$	=	\$19.75
Job #231 overhead:	$\$19.75 \times 10 \text{ hrs.}$	=	<u>\$197.50</u>

212. Correct answer c. The overhead applied to a job incurring 20 hours of direct labor is \$140 as shown below.

Total budgeted direct labor hours:	$\$50,000 \div \$5$	=	10,000 hrs.
Overhead cost/direct labor hour:	$\$70,000 \div 10,000$	=	\$7 per hr.
Overhead cost for 20 hours:	$20 \times \$7$	=	<u>\$140</u>

213. Correct answer b. Statements I and IV would apply. The factory overhead rate is likely increased as expenses such as depreciation have increased. The increase in automation makes it more difficult to respond to economic changes as the company cannot simply layoff or hire workers. Statements II and III are incorrect as machine hours would be more appropriate and Haney will still be able to calculate labor variances.

214. Correct answer d. Allocation on the basis of the number of employees would have the least negative impact on the Financial Consulting Division as the division has only 28% of the total employees while it has 30% of revenues and 30% of variable expenses.
215. Correct answer c. The engineering cost per unit of Product B is \$15 calculated as follows.
- |                                 |                            |   |                |
|---------------------------------|----------------------------|---|----------------|
| Engineering cost per order:     | $\$300,000 \div (12 + 18)$ | = | \$10,000       |
| Engineering cost per Product B: | $\$10,000 \times 18$       | = | \$180,000      |
| Cost per unit of Product B:     | $\$180,000 \div 12,000$    | = | <u>\$15.00</u> |
216. Correct answer d. The dual-rate cost-allocation method classifies costs in each cost pool into two subcost pools, a variable-cost subpool and a fixed cost subpool, with each of these subpools having a different cost allocation base.
217. Correct answer d. If the cost of legal services is allocated on the basis of usage, departments will be very careful about usage. To encourage usage, the cost should be absorbed as a corporate expense.
218. Correct answer a. Allocating service department costs to production departments is most likely to cause production managers to be more careful about the use of services and not request excessive service.
219. Correct answer a. Depending on the step-down sequence used, different allocation of support departments to operating departments will result. Therefore, the correct response is direct and reciprocal methods only.
220. Correct answer d. The reciprocal method of departmental allocation explicitly includes the mutual services provided among all support departments. Therefore, the Information Systems Department would be allocated all users including the Personnel Department.
221. Correct answer b. The general step-down sequence begins with the support department that renders the greatest amount of service. There, the Personnel Department would be first and the Information Systems Department would not be allocated to the Personnel Department.
222. Correct answer d. The reciprocal allocation method allocates costs by explicitly including the mutual services provided among support departments and allows for the full incorporation of interdepartmental relationships.
223. Correct answer b. Using the direct method of allocation, only the hours of the production departments would be included in the allocation base ( $3600 + 1800 + 2700 = 8100$ ).

224. Correct answer c. Total overhead in the Machining Department is \$442,053 as presented below.

Machining overhead	\$200,000
Maintenance (\$360,000 x .5)	180,000
Systems [(\$95,000 + \$36,000*) x .473687**]	<u>62,053</u>
Total overhead	<u>\$442,053</u>

\*Maintenance allocated to Systems (\$360,000 x 10%)

\*\*1.05 x 45%

225. Correct answer c. Using the direct method of cost allocation, all support departments are allocated directly to production departments. Relationships between support departments are not included in the allocation.

226. Correct answer d. Using the step-down method, Logo should allocate \$20,000 of Systems to Facilities and \$24,000 of Facilities to Machining as shown below.

% allocation Systems to Facilities:	$900 \div (9,300 - 300)$	=	10%
Allocation	$\$200,000 \times 10\%$	=	<u>\$20,000</u>
% allocation Facilities to Mach.	$2,000 \div (11,600 - 600 - 1,000)$	=	20%
Allocation	$(\$100,000 + \$20,000*) \times 20\%$	=	<u>\$24,000</u>

\*Systems to Facilities allocation

227. Correct answer d. The total overhead allocated by the Machining Department to Adam's product is \$445,000 calculated as follows.

% allocation Maint. to Mach.:	$50\% \div (40\% + 50\%)$	=	.555
Allocation	$.555 \times \$360,000$	=	\$199,800
% allocation Systems to Mach.:	$45\% \div (45\% + 50\%)$	=	.4736842
Allocation	$.4736842 \times \$95,000$	=	\$45,200
Total allocation	$\$199,800 + \$45,200 + \$200,000$	=	<u>\$445,000</u>

228. Correct answer a. The use of just-in-time production generally involves developing relationships with a minimum number of suppliers that reliably deliver high quality products.
229. Correct answer d. According to the theory of constraints, increasing the efficiency of operations at non-bottleneck machines will make the slowdowns at bottlenecks worse as it will increase the traffic at bottlenecks.
230. Correct answer b. A company must first locate the source of the production constraint before it can effectively work to increase production capacity.

231. Correct answer c. In conventional financial statements, customer service costs are generally part of sales and administrative costs and not associated with a product. In value-chain statements, customer service is treated as part of the value chain and therefore associated with product cost.
232. Correct answer a. In option A, the functions are in the proper order while in the other options the functions are out of order, e.g., in option B, production design must precede production.
233. Correct answer d. Activities I and III are the only activities that actually increase the value of the product and would, therefore, be classified as value-added activities.
234. Correct answer c. A major disadvantage of business process reengineering is that as processes are changed to be more efficient, the internal controls that were established previously can be ignored or overlooked and may not be replaced with new controls.
235. Correct answer d. Retail Partners would benefit from all of these benchmarking techniques as all would identify best practices.
236. Correct answer a. Option A does not compare the business unit to any other standard, e.g., best practice, and is not an example of benchmarking standards.
237. Correct answer c. Prevention costs include Design Engineering (\$300,000), Supplier Evaluation (\$240,000), and Labor Training (\$150,000) for a total of \$690,000. All of these activities would likely take place prior to production to improve quality and prevent costly errors.
238. Correct answer b. Appraisal costs are incurred to detect individual units that do not conform to specifications, e.g., inspecting raw materials.
239. Correct answer b. Appraisal costs are incurred to detect individual units that do not conform to specifications, e.g., product testing costs.
240. Correct answer d. External failure costs are incurred by non-conforming products after shipment to customers. Product field testing would occur during the design phase and therefore prior to shipment.
241. Correct answer a. Internal failure costs are incurred by non-conforming products prior to shipment, e.g., the cost to rework defective units.
242. Correct answer d. One of the main objectives of internal controls is to provide reasonable assurance of reliability of financial reporting (financial statement assertions).
243. Correct answer d. The benefits of internal controls must always exceed the costs of implementing them. Implementing a system of absolute assurance is overly costly; thus only reasonable assurance can be obtained.

244. Correct answer c. Cashier prepares deposit slip for all cash receipts received. This action involves two functions that are not segregated: custody of assets and recording of transactions. In addition, the summary is not done in a timely manner.
245. Correct answer d. In order to properly segregate duties within the computer department, the responsibility to reprocess the errors detected during processing of the data should be given to the data control group and not to department manager, who should have access to review transactions, but not process transactions; nor to systems analyst, who should have access to view and analyze transactions, but not process transactions, and not to the computer programmer, who should have access to programs, not transactions.
246. Correct answer b. Direct deposit of pay in lieu of distribution of physical paychecks is an example of an effective safeguarding control that limits access to the organization's assets to authorized personnel.
247. Correct answer a. Policies of strong internal control, segregation of duties, and requiring employees to take vacations is an effective way of deterring fraud. In addition, periodic rotation of employees would also strengthen the control. These practices help prevent collusion and decrease the opportunity for employees to hide fraudulent behavior.
248. Correct answer a. Foreign Corrupt Practices Act of 1977 does not require a public company to sign an agreement that it will abide by the Act, however if the company does not abide by the Act, the company may be assessed fines up to \$2,000,000 and imprisonment for up to 5 years.
249. Correct answer c. The principal purpose of Foreign Corrupt Practices Act of 1977 was to prevent the bribery of foreign officials, foreign political parties or candidates for political office in the foreign country by U.S. firms seeking to do business overseas.
250. Correct answer c. The responsibility of Internal Audit Function is not only to identify the control weaknesses during the audit, but to follow-up on the audit findings to make sure the issues have been resolved.
251. Correct answer d. Internal auditors are often looking for significant or unexpected variances in account balances and investigate these. All of the methods listed - Cost Variance Analysis, Flexible Budgets and Activity-based Management – can assist internal auditors in such variance analyses, except for joint cost allocation, which is a method of allocating costs to products, and does not help with variance analysis.
252. Correct answer b. The objective of compliance testing is ensuring conformity with laws, regulations and contracts. This includes Federal and State laws.
253. Correct answer d. One of the objectives of the operational audit is to ensure efficient and economic operations and the effectiveness with which these operations achieve their objectives. This is not an objective of the compliance audit that ensures compliance with laws or the information system audit that check the systems' controls.



254. Correct answer d. One of the objectives of the operational audit is to ensure efficient and economic operations and the effectiveness with which these operations achieve their objectives. This is not an objective of the compliance audit that ensures compliance with laws or the financial statements audit that checks to ensure that financial statements are not misstated.
255. Correct answer c. Viruses are computer programs that propagate themselves from one computer to another without the user's knowledge. Trojan horses are restricted to a specific computer, these are voluntarily installed as regular programs, but, behind the scenes, they contain codes that a hacker can activate later to take over the computer .
256. Correct answer a. Key verification is one of the data controls. A record's key is the group of values that uniquely identify the record. No application process should be able to alter the data in these key fields.
257. Correct answer c. Compatibility check is most appropriate control to verify that the user is authorized to execute a particular on-line transaction. It verifies the user access information, such as user ID, password and security profile is correct.
258. Correct answer b. Single sign-on, although a great convenience to users, because they don't need to remember multiple passwords and user-ids and can access all IT resources using single sign-on data. This however, becomes a single-point of failure, if the sign-on does not work and the user is not able to access any of the IT resources.
259. Correct answer d. Computer Operator executes programs and maintains custody of programs and files. This action involves two functions that are not segregated: recording of transactions and custody of assets.
260. Correct answer c. Encryption technology converts data into a code. Unauthorized users may still be able to access the data, but without the encryption key, they will be unable to decode the information; thus encrypting confidential data is a secure way of transmitting it over the Internet.
261. Correct answer c. Encryption technology converts data into a code. Unauthorized users may still be able to access the data, but without the encryption key, they will be unable to decode the information. Two major types of encryption software exist: public key and private key. An example of authentication is assigning each user a unique identifier and password. Not even information security personnel should be able to view unencrypted passwords.
262. Correct answer c. Flowcharting is the representation of a process using pictorial symbols. A document flowchart would be an effective way to visualize how the document (a copy of a shipping order) flows through various departments.

263. Correct answer c. Operating system should be the first one to be restored at an alternate site so the operations can continue with minimum of amount of interruption; while other systems, such as decision support, online system, can be restored later.
264. Correct answer d. In accordance with IMA's "Statement of Ethical Professional Practice", a member's failure to comply with the standards of competence, confidentiality, integrity and credibility may result in disciplinary action. Disclosing company's internal budget to an outside party is a breach of the ethical standard of confidentiality.

The CMA logo consists of the letters "CMA" in a bold, serif font, with a small registered trademark symbol (®) to the upper right. The letters are dark green.

*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

# CMA 2010 Support Package

**Part 1: Financial Planning,  
Performance and Control**

Practice Questions

### CMA Exam Support Practice Questions – Part I

1. Which of the following types of budget systems **most** strongly supports the objective of improving communication and promoting coordination?
  - a. Bottom up, flexible budgets.
  - b. Bottom up, fixed budgets.
  - c. Top down, flexible budgets.
  - d. Top down, fixed budgets.
2. The table below shows the estimated probabilities of the percent of defective units resulting from a production run.

<u>Percent Defective</u>	<u>Probability</u>
2%	30%
3%	50%
4%	20%

The expected percent defective for a production run would be

- a. 1.50%.
  - b. 2.30%.
  - c. 2.90%.
  - d. 3.00%.
3. Reeves Inc. has developed a new production process to manufacture its product. The new process is complex and requires a high degree of technical skill. However, management believes there is a good opportunity for the employees to improve as they become more familiar with the production process. The production of the first unit requires 100 direct labor hours. If a 70% learning curve is used, the cumulative direct labor hours required to produce a total of eight units would be
  - a. 196 hours.
  - b. 274 hours.
  - c. 392 hours.
  - d. 560 hours.
4. A forecasting technique that is a combination of the last forecast and the last observed value is called
  - a. Delphi.
  - b. least squares.
  - c. regression.
  - d. exponential smoothing.

5. A large manufacturer's forecast of total sales revenues for a year is **least** likely to be influenced by
  - a. the seasonal pattern of sales revenues throughout the year.
  - b. anticipated interest rates and unemployment rates.
  - c. expected shortages of key raw materials.
  - d. input from sales personnel.
6. Carson Products sells sweatshirts and is preparing for a World Cup Soccer match. The cost per sweatshirt varies with the quantity purchased as follows.

<u>Quantity</u>	<u>Unit cost</u>
4,000	\$14.00
5,000	13.50
6,000	13.00
7,000	12.50

Carson must purchase the shirts one month before the game and has analyzed the market and estimated sales levels as follows.

Unit sales	4,000	5,000	6,000	7,000
Probability	15%	20%	35%	30%

The estimated selling price is \$25 for sales made before and during the day of the game. Any shirts remaining after game day can be sold at wholesale to a local discount store for \$10.

The expected profit if Carson purchased 6,000 shirts is

- a. \$64,500.
  - b. \$66,000.
  - c. \$69,000.
  - d. \$72,000.
7. The type of budget that is available on a continuous basis for a specified future period by adding a month, quarter, or year in the future as the month, quarter, or year just ended is deleted, is called a
    - a. rolling budget.
    - b. kaizen budget.
    - c. activity-based budget.
    - d. flexible budget.

8. In the budgeting and planning process for a firm, which one of the following should be completed first?
- a. Sales budget.
  - b. Financial budget.
  - c. Cost management plan.
  - d. Strategic plan.
9. Which one of the following is **not** an advantage of activity-based budgeting?
- a. Better identification of resource needs.
  - b. Linking of costs to outputs.
  - c. Identification of budgetary slack.
  - d. Reduction of planning uncertainty.
10. In preparing a corporate master budget, which one of the following is **most** likely to be prepared last?
- a. Sales budget.
  - b. Cash budget.
  - c. Production budget.
  - d. Cost of Goods Sold budget.
11. Which one of the following is **most** important to a successful budgeting effort?
- a. Experienced analysts.
  - b. Integrated budget software.
  - c. Reliable forecasts and trend analysis.
  - d. Top management support.
12. In an organization that plans by using comprehensive budgeting, the master budget refers to
- a. a compilation of all the separate operational and financial budget schedules of the organization.
  - b. the booklet containing budget guidelines, policies, and forms to use in the budgeting process.
  - c. the current budget updated for operations for part of the current year.
  - d. a budget of a not-for-profit organization after it is approved by the appropriate authoritative body.

13. Steers Company has just completed its pro forma financial statements for the coming year. Relevant information is summarized below.

Projected net income	\$100,000
Anticipated capital expenditures	50,000
Increase in working capital	25,000
Depreciation expense	15,000

From the information provided above, the increase in Steers' cash account for the coming year will be

- a. \$25,000.
  - b. \$40,000.
  - c. \$90,000.
  - d. \$160,000.
14. Holland Company is in the process of projecting its cash position at the end of the second quarter. Shown below is pertinent information from Holland's records.

Cash balance at end of 1st quarter	\$ 36,000
Cash collections from customers for 2nd quarter	1,300,000
Accounts payable at end of 1st quarter	100,000
Accounts payable at end of 2nd quarter	75,000
All 2nd quarter costs and expenses (accrual basis)	1,200,000
Depreciation (accrued expense included above)	60,000
Purchases of equipment (for cash)	50,000
Gain on sale of asset (for cash)	5,000
Net book value of asset sold	35,000
Repayment of notes payable	66,000

From the data above, determine Holland's projected cash balance at the end of the second quarter.

- a. Zero.
- b. \$25,000.
- c. \$60,000.
- d. \$95,000.

15. Werner Company buys raw materials from several suppliers, and makes payments according to the following schedule.

In the month of purchase	25%
In the month after purchase	60%
In the second month after purchase	15%

In preparing the master budget for the fourth quarter of the year, Werner assumed that total purchases for the quarter would be spread evenly over the three months. In its pro forma balance sheet, Werner anticipated a December 31 account payable balance of \$207,000. What amount of purchase did Werner anticipate for the fourth quarter of the year?

- a. \$496,800.
  - b. \$558,900.
  - c. \$621,000.
  - d. \$690,000.
16. Maximilian Computer Company uses a comprehensive budgeting system in planning its annual operations. Which of the following **best** describes the information needed in order to determine the budgeted cost of circuit boards to be purchased for use in building its laptop computer? Assume one circuit board is used in each laptop.
- a. Begin with budgeted laptop sales in units, add the desired ending inventory of circuit boards, deduct the expected beginning inventory of circuit boards, and multiply the resulting amount by the budgeted purchase cost per circuit board.
  - b. Begin with budgeted laptop sales in units, deduct the desired ending inventory of circuit boards, add the expected beginning inventory of circuit boards, and multiply the resulting amount by the purchase cost per circuit board.
  - c. Begin with budgeted laptop production in units, deduct the desired ending inventory of circuit boards, add the expected beginning inventory of circuit boards, and multiply the resulting amount by the purchase cost per circuit board.
  - d. Begin with budgeted laptop production in units, add the desired ending inventory of circuit boards, deduct the expected beginning inventory of circuit boards, and multiply the resulting amount by the budgeted purchase cost per circuit board.
17. The starting point for creating a master budget for a proprietary secretarial school would be
- a. estimating salaries of the instructors.
  - b. forecasting enrollment.
  - c. preparing a capital expenditure budget.
  - d. preparing the student recruiting budget.
18. Trumbull Company budgeted sales on account of \$120,000 for July, \$211,000 for August, and \$198,000 for September. Collection experience indicates that 60% of the budgeted



sales will be collected the month after the sale, 36% the second month, and 4% will be uncollectible. The cash from accounts receivable that should be budgeted for September would be

- a. \$169,800.
- b. \$194,760.
- c. \$197,880.
- d. \$198,600.

19. The Profit and Loss Statement of Madengrad Mining Inc. includes the following information for the current fiscal year.

Sales	\$160,000
Gross profit	48,000
Year-end finished goods inventory	58,300
Opening finished goods inventory	60,190

The cost of goods manufactured by Madengrad for the current fiscal year is

- a. \$46,110.
- b. \$49,890.
- c. \$110,110.
- d. \$113,890.

20. The JoyT Company manufactures Maxi Dolls for sale in toy stores. In planning for this year, JoyT estimated variable factory overhead of \$600,000 and fixed factory overhead of \$400,000. JoyT uses a standard costing system, and factory overhead is allocated to units produced on the basis of standard direct labor hours. The denominator level of activity budgeted for this year was 10,000 direct labor hours, and JoyT used 10,300 actual direct labor hours.

Based on the output accomplished during the year, 9,900 standard direct labor hours should have been used. Actual variable factory overhead was \$596,000, and actual fixed factory overhead was \$410,000 for the year. Based on this information, the volume variance for JoyT for this year is

- a. \$4,000 unfavorable.
- b. \$6,000 unfavorable.
- c. \$10,000 unfavorable.
- d. \$16,000 unfavorable.

21. Garland Company uses a standard cost system. The standard for each finished unit of product allows for 3 pounds of plastic at \$0.72 per pound. During December, Garland bought 4,500 pounds of plastic at \$0.75 per pound, and used 4,100 pounds in the production of 1,300 finished units of product. What is the material purchase price variance for the month of December?
- \$117 unfavorable.
  - \$123 unfavorable.
  - \$135 unfavorable.
  - \$150 unfavorable.
22. Simpson Inc. is a major consumer electronics distributor with 4 regional sales offices in major cities and 12 district sales offices in mid-sized cities in the U.S. Sal Jones is the Regional Director of the New York regional sales office. Jones is responsible for meeting the region's sales goals, and controlling the costs of the regional office and the 4 district offices in his region. The New York Region is which one of the following types of responsibility centers?
- Cost center.
  - Revenue center.
  - Profit center.
  - Investment center.
23. Which one of the following **best** describes the performance elements contained in most balanced scorecards?
- |    | <u>Financial<br/>Performance Measures</u> | <u>Nonfinancial<br/>Performance Measures</u> |
|----|---|--|
| a. | No  | No.  |
| b. | No  | Yes.   |
| c. | Yes                                       | No.  |
| d. | Yes                                       | Yes.   |
24. Roberta Johnson is the manager of Sleep-Well Inn, one of a chain of motels located throughout the U.S. An example of an operating cost at Sleep-Well that is both direct and fixed is
- Johnson's salary.
  - water.
  - toilet tissue.
  - advertising for the Sleep-Well Inn chain.

25. The schedule of cost of goods manufactured of Gruber Fittings, Inc. shows the following balances for its fiscal year-end.

Direct manufacturing labor	\$ 280,000
Manufacturing overhead	375,000
Ending work-in-process inventory	230,000
Raw materials used in production	450,000
Cost of goods manufactured	1,125,000

The value of the work-in-process inventory at the beginning of the fiscal year was

- a. \$625,000.
  - b. \$250,000.
  - c. \$210,000.
  - d. \$20,000.
26. When compared with normal spoilage, abnormal spoilage
- a. arises more frequently from factors that are inherent in the manufacturing process.
  - b. is given the same accounting treatment as normal spoilage.
  - c. is generally thought to be more controllable by production management than normal spoilage.
  - d. is not typically influenced by the “tightness” of production standards.
27. Assuming that there is a constant contribution margin per unit, the change in period-to-period operating income when using variable costing can be explained by the change in the
- a. unit sales level multiplied by the unit sales price.
  - b. finished goods inventory level multiplied by the unit sales price.
  - c. unit sales level multiplied by the unit contribution margin.
  - d. finished goods inventory level multiplied by the unit contribution margin.
28. Tucariz Company processes Duo into two joints products, Big and Mini. Duo is purchased in 1,000-gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. If the physical measure method is used to allocate joint costs to the final products, the total cost assigned to produce Mini is
- a. \$500.
  - b. \$1,000.
  - c. \$4,000.
  - d. \$4,500.

29. Pane Company uses a job costing system and applies overhead to products on the basis of direct labor cost. Job No. 75, the only job in process on January 1, had the following costs assigned as of that date: direct materials, \$40,000; direct labor, \$80,000; and factory overhead, \$120,000. The following selected costs were incurred during the year.

Traceable to jobs:

Direct materials	\$178,000	
Direct labor	<u>345,000</u>	\$523,000

Not traceable to jobs:

Factory materials and supplies	46,000	
Indirect labor	235,000	
Plant maintenance	73,000	
Depreciation on factory equipment	29,000	
Other factory costs	<u>76,000</u>	459,000

Pane's profit plan for the year included budgeted direct labor of \$320,000 and factory overhead of \$448,000. There was no work-in-process on December 31. Pane's overhead for the year was

- \$11,000 overapplied
  - \$24,000 overapplied.
  - \$11,000 underapplied.
  - \$24,000 underapplied.
30. Parker Company pays each member of its sales staff a salary as well as a commission on each unit sold. For the coming year, Parker plans to increase all salaries by 5% and to keep unchanged the commission paid on each unit sold. Because of increased demand, Parker expects the volume of sales to increase by 10%. How will the total cost of sales salaries and commissions change for the coming year?
- Increase by 5% or less.
  - Increase by more than 5% but less than 10%.
  - Increase by 10%.
  - Increase by more than 10%.

31. Kepler Optics makes lenses for telescopes. Because Kepler will only sell lenses of the highest quality, the normal spoilage during a reporting period is 1,000 units. At the beginning of the current reporting period, Kepler had 2,200 units in inventory, and during the period, production was started and completed on 4,000 units. Units in inventory at the end of the current reporting period were 1,500, and the units transferred out were 3,000. During this period, the abnormal spoilage for Kepler's lense production was
- a. 700 units.
  - b. 1,000 units.
  - c. 1,700 units.
  - d. 3,200 units.
32. Which one of the following is an advantage of using variable costing?
- a. Variable costing complies with the U.S. Internal Revenue Code.
  - b. Variable costing complies with generally accepted accounting principles.
  - c. Variable costing makes cost-volume relationships more easily apparent.
  - d. Variable costing is most relevant to long-run pricing strategies.
33. Huntington Corporation pays bonuses to its managers based on operating income, as calculated under variable costing. It is now two months before year-end, and earnings have been depressed for some time. Which one of the following actions should Wanda Richards, production manager, implement if she desires to maximize her bonus for this year?
- a. Step up production so that more manufacturing costs are deferred into inventory.
  - b. Eliminate \$2.3 million of advertising and marketing costs.
  - c. Postpone \$1.8 million of discretionary equipment maintenance until next year.
  - d. Implement, with the aid of the controller, an activity-based costing and activity-based management system.

34. Juniper Manufacturing uses a weighted-average process costing system at its satellite plant. Goods pass from the Major Assembly Department to the Finishing Department to finished goods inventory. The goods are inspected twice in the Finishing Department. The first inspection occurs when the goods are 30% complete, and the second inspection occurs at the end of production. The following data pertain to the Finishing Department for the month of July.

	<u>Units</u>
Good units started and completed during July	65,000
Normal spoilage - first inspection	2,000
Abnormal spoilage - second inspection	150
Ending work-in-process inventory, 60% complete	15,000

There was no beginning work-in-process inventory in July. Juniper recognizes spoiled units to make the cost of all spoilage visible in their management reporting. Equivalent units for assigning costs for July would total

- a. 74,000.
  - b. 74,150.
  - c. 74,600.
  - d. 74,750.
35. Breegle Company produces three products (B-40, J-60, and H-102) from a single process. Breegle uses the physical volume method to allocate joint costs of \$22,500 per batch to the products. Based on the following information, which product(s) should Breegle continue to process after the splitoff point in order to maximize profit?

	<u>B-40</u>	<u>J-60</u>	<u>H-102</u>
Physical units produced per batch	1,500	2,000	3,200
Sales value per unit at splitoff	\$10.00	\$4.00	\$7.25
Cost per unit of further processing after splitoff	3.05	1.00	2.50
Sales value per unit after further processing	12.25	5.70	9.75

- a. B-40 only.
- b. J-60 only.
- c. H-102 only.
- d. B-40 and H-102 only.

36. A review of the year-end accounting records of Elk Industries discloses the following information.

Raw materials	\$ 80,000
Work-in-process	128,000
Finished goods	272,000
Cost of goods sold	1,120,000

The company's underapplied overhead equals \$133,000. On the basis of this information, Elk's cost of goods sold is **most** appropriately reported as

- a. \$987,000.
  - b. \$1,213,100.
  - c. \$1,218,000.
  - d. \$1,253,000.
37. Coach Corporation is considering which capacity measure is appropriate to use as the denominator level of activity when applying fixed factory overhead to units produced. Assume that Coach selects direct labor hours as the cost driver and the following additional data are available from the prior year.

	<u>Hours</u>
Standard direct labor hours for normal capacity	200,000
Standard direct labor hours allowed for units produced in the prior year	210,000
Standard direct labor hours for the master budget capacity	220,000

Which of the following capacity measures for the denominator-level of activity would have resulted in an unfavorable volume variance?

- a. Both normal capacity and master budget capacity.
  - b. Neither normal capacity nor master budget capacity.
  - c. Normal capacity only.
  - d. Master budget capacity only.
38. In allocating support department costs to operating departments, the allocation method that **best** accounts for interdepartmental relationships between support departments is the
- a. reciprocal method.
  - b. direct method.
  - c. step method.
  - d. physical volume method.

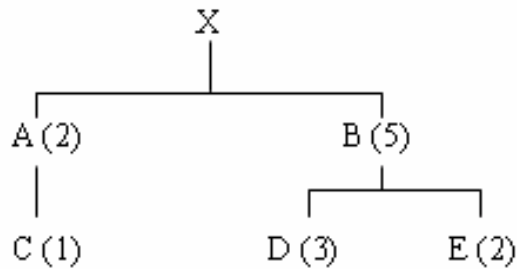
39. Which of the following is **not** a correct comparison of a just-in-time system with a traditional system?

<u>Traditional</u>	<u>Just-in-Time</u>
a. Longer lead times	Shorter lead times
b. Inventory is an asset	Inventory is a liability
c. Some scrap tolerated	Zero defects desired
d. Lot size based on immediate need	Lot size based on formulas

40. To meet Zylon Corporation's overall objectives, the Frame Division has just initiated a program to increase sales by improving the manufacturing quality of its products. The **most** appropriate management level to be responsible for this program is the
- a. sales manager.
  - b. production manager.
  - c. division president.
  - d. receiving and inspection manager.
41. The cost of scrap, rework, and tooling changes in a product quality cost system is categorized as a(n)
- a. external failure cost.
  - b. internal failure cost.
  - c. prevention cost.
  - d. appraisal cost.
42. When management of the sales department has the opportunity to override the system of internal controls of the accounting department, a weakness exists in
- a. risk management.
  - b. information and communication
  - c. monitoring.
  - d. the control environment.
43. Of the following, the **primary** objective of compliance testing is to determine whether
- a. procedures are regularly updated.
  - b. financial statement line items are properly stated.
  - c. controls are functioning as planned.
  - d. collusion is taking place.



44. Segregation of duties is a fundamental concept in an effective system of internal control. Nevertheless, the internal auditor must be aware that this safeguard can be compromised through
- a. lack of training of employees.
  - b. collusion among employees.
  - c. irregular employee reviews.
  - d. absence of internal auditing.
45. Starr Company uses material requirements planning (MRP) and manufactures a product with the following product structure tree



- Starr has just received an order for 100 units of X, the finished product. The company has 20 units of X, 100 units of B, and 50 units of E in inventory. How many units of E must Starr purchase in order to fill the order?
- a. 1,000.
  - b. 830.
  - c. 800.
  - d. 550.
46. Which one of the following forms of audit is **most** likely to involve a review of an entity's performance of specific activities in comparison to organizational specific objectives?
- a. Information system audit.
  - b. Financial audit.
  - c. Operational audit.
  - d. Compliance audit.

47. In determining next year's overhead application rates, a company desires to focus on manufacturing capacity rather than output demand for its products. To derive a realistic application rate, the denominator activity level should be based on
- a. practical capacity.
  - b. maximum capacity.
  - c. normal capacity.
  - d. master-budget (expected annual) capacity.
48. An accounting system identification code that utilizes a sum-of-digits check digit will detect all of the following errors except
- a. completeness errors.
  - b. transcription errors.
  - c. transposition errors.
  - d. validity errors.
49. In entering the billing address for a new client in Emil Company's computerized database, a clerk erroneously entered a nonexistent zip code. As a result, the first month's bill mailed to the new client was returned to Emil Company. Which one of the following would **most** likely have led to discovery of the error at the time of entry into Emil Company's computerized database?
- a. Limit test.
  - b. Validity test.
  - c. Parity test.
  - d. Record count test.
50. A company's management is concerned about computer data eavesdropping and wants to maintain the confidentiality of its information as it is transmitted. The company should utilize
- a. data encryption.
  - b. dial back systems.
  - c. message acknowledgment procedures.
  - d. password codes.

51. Which one of the following would **most** compromise the use of backups as protection against loss or damage of master files?
- a. Use of magnetic tape.
  - b. Inadequate ventilation.
  - c. Storing of all files in one location.
  - d. Failure to encrypt data.
52. Shelly Smith, CMA, is the consumer electronics buyer for a major chain of department stores. His department's gross profit margin is monitored by senior management on a quarterly basis. When Smith thinks he may have trouble making the gross profit goal for a quarter, he may claim unauthorized charge-backs on merchandise invoices from the manufacturer. A retailer may obtain specific authorization from the manufacturer to deduct (charge-back) from the invoice for damaged goods, goods returned by customers, mistakes in shipping, and similar specific reasons. In accordance with IMA's Statement of Ethical Professional Practice, which one of the following statements is **most** correct?
- a. Smith is violating the Confidentiality standard by informing the manufacturer of the value and reason(s) for the charge-backs.
  - b. Smith is violating the Credibility standard by communicating erroneous information. The charge-back he claimed had not been approved by the manufacturer.
  - c. Smith is violating the Competence standard, because the Fair Trade Commission (FTC) has established regulations prohibiting charge-backs which are not approved by the vendor.
  - d. The unauthorized charge-backs do not violate IMA's Statement, or any other ethics policy. At worst, the charge-backs will be reversed in a future period.

### Part 1 Answers

1. Key = a

2. Key = c

Sum of the percent defective multiplied by its probability of occurrence  
 $(2\% \times .30) + (3\% \times .50) + (4\% \times .20) = .60 + 1.50 + .80 = 2.90\%$

3. Key = b

$100 \times .7 \times .7 \times .7 = 34.3$  average hours for 8 units; total hours =  $8 \times 34.3 = 274.4$  hours

4. Key = d

Exponential smoothing combines the last forecast and the last observed value:

$$F_{t+1} = aY_t + (1 - a)F_t$$

where  $F_{t+1}$  = forecast of the time series for period  $t+1$

$Y_t$  = actual value of the time series in period  $t$

$F_t$  = forecast of the time series for period  $t$

$a$  = smoothing constant.

5. Key = a

Since the sales forecast is prepared for the whole year, known seasonal revenue fluctuation patterns should not significantly affect a total year forecast, unlike general economic conditions, sales personnel input, and raw materials supply issues.

6. Key = a

	Demand			
	4000	5000	6000	7000*
Revenue (orig. sales)	100,000	125,000	150,000	150,000
Cost of shirts	78,000	78,000	78,000	78,000
Wholesale revenue	20,000	10,000	0	0
Profit	42,000	57,000	72,000	72,000
Probability	15%	20%	35%	30%
Profit x probability	6,300	11,400	25,200	21,600
Expected profit (sum)	64,500			

\* Sales limited to 6000, since purchased only 6000

7. Key = a

A rolling budget (or continuous budget) is a plan that always covers a specified future period by adding a period in the future and dropping the period just ended. It forces management to continuously focus on the future specified time period. The time period is always the same length, but the actual time period covered by the budget moves forward with the passage of time.

8. Key = d

Strategic planning drives all other planning and budgeting activities within the firm.

9. Key = d

Activity-based budgeting concentrates on the budgeted cost of activities necessary to produce and sell products and services (outputs). This, in turn, will increase the identification of resource needs and budgetary slack. However, activity-based budgeting does not necessarily reduce planning uncertainty.

10. Key = b

The pro forma statement of cash flows is usually one of the last steps in preparing a master budget. The process of creating a master budget usually has the following sequence: sales budget, production budget, selling and administrative expenses budget, cash budget, and pro forma financial statements.

11. Key = d

Top managers determine and significantly influence how budgets are perceived in their companies. Top management initiates the planning and budgeting process and approves policies and procedures regulating it, which makes its support a crucial success factor for the budgeting process.

12. Key = a

13. Key = b

Net income	\$100,000
Capital expenditures	(50,000)
Increase in working capital	(25,000)
Depreciation	<u>15,000</u>
Increase in cash	<u>\$ 40,000</u>

14. Key = d

Beginning cash balance	\$ 36,000
Cash collections	1,300,000
Decrease in accounts payable	(25,000)
Costs and expenses	(1,200,000)
Add back depreciation included in expenses	60,000
Cash purchase of equipment	(50,000)
Cash received from sale of asset (\$35,000 + \$5,000)	40,000
Repayment of notes payable	<u>(66,000)</u>
Ending cash balance	<u>\$ 95,000</u>

15. Key = d

Accounts payable at 12/31 = 75% of December and 15% of November  
 $\$207,000 / .90 = \$230,000$  for month; \$690,000 for the quarter

16. Key = d

To determine the budgeted cost of purchases, the number of units to be produced should be adjusted by the change in inventory and then multiplied by the budgeted purchase cost.

17. Key = b

The master budget always begins with the forecast of sales. Tuition from students is the revenue source in a proprietary school.

18. Key = a

- July's collections in September + August's collections in September.
- The balance of July's sales is uncollectible.

$36\% \times \$120,000 = \$ 43,200$	July sales on account collected in September
$60\% \times \$211,000 = \underline{126,600}$	August sales on account collected in September
<u>\$169,800</u>	

19. Key = c

Cost of goods sold = Sales – Gross profit = \$160,000 - \$48,000 = \$112,000.  
 Available for sale finished goods = Cost of goods sold + Ending finished goods inventory = \$112,000 + \$58,300 = \$170,300.  
 Cost of goods manufactured = Available for Sale finished goods - Opening finished goods inventory = \$170,300 – \$60,190 = \$110,110.

20. Key = a

$$(10,000 \text{ hrs.} - 9900 \text{ hrs.}) \times (400,000/10,000)$$

21. Key = c

$$(\text{Standard price} - \text{actual price}) \times \text{number of pounds purchased} \\ (\$0.72 - \$0.75) \times 4,500 \text{ pounds} = \$135 \text{ unfavorable}$$

22. Key = c

In a profit center the manager is responsible for both revenues and costs, but not investments.

23. Key = d

24. Key = a

A direct cost can be traced directly to a cost object. Salary does not vary over a set period of time and is therefore a fixed direct labor cost. The other items are either variable or indirect.

25. Key = b

$$\begin{aligned} &\text{Cost of goods manufactured} + \text{Ending work-in-process} = \text{Direct manufacturing labor} \\ &+ \text{Manufacturing overhead} + \text{Raw materials used in production} + \text{Work in process at} \\ &\text{the beginning of the fiscal year} \\ &\text{Work-in-process at the beginning of the fiscal year} = \text{Cost of goods manufactured} + \\ &\text{Ending work in process} - \text{direct manufacturing labor} - \text{Manufacturing overhead} - \text{Raw} \\ &\text{materials used in production} = \$1,125,000 + \$230,000 - \$280,000 - \$375,000 - \\ &\$450,000 \end{aligned}$$

26. Key = c

27. Key = c

28. Key = b

$$(\$3,000 + \$2,000) \times 200/1,000 = \$1,000$$

29. Key = b

Applied overhead - actual = amount over/underapplied  
 $\$448,000/\$320,000 =$  budgeted application rate of 1.4  
 $\$345,000$  direct labor actual  $\times 1.4 = \$483,000$  applied  
 $\$483,000$  applied -  $\$459,000$  total not traceable =  $\$24,000$  overapplied

30. Key = b

The cost of salaries will increase by exactly 5%. The cost of commissions paid (a variable cost) will increase by the level of activity, which is 10%. Because total compensation is a blend of these two costs, total compensation will increase by some amount between 5% and 10%.

31. Key = a

Total spoilage = beginning units + units started and completed – units transferred out – ending units =  $2,200 + 4,000 - 3,000 - 1,500 = 1,700$   
Abnormal spoilage = Total spoilage – Normal spoilage =  $1,700 - 1,000 = 700$

32. Key = c

Variable costing is a method of inventory costing in which all variable manufacturing costs are included as inventoriable costs. Fixed manufacturing costs are considered period expenses; consequently, fixed costs are not allocated to the units of production in a cost-volume analysis. Thus, with variable costing the analysis is more apparent; the per-unit cost stays constant as the volume of production changes.

33. Key = c

All of the listed actions are targeted to increase operating income; however, cutting \$2.3 million of advertising and marketing costs is beyond the control of the production manager. In addition, stepping up production to defer manufacturing costs into inventory would work only under absorption costing. Finally, ABC and ABM systems implementation is beneficial in the long-run, but would have little effect in the current short-term period. Thus, postponing equipment maintenance until the next reporting period is the only action that would affect operating income and the production managers' year-end bonus.



34. Key = d

	<u>Physical Units</u>	<u>Equivalent Units</u>
Started and completed during month (100%)	65,000	65,000
Normal spoilage (30%)	2,000	600
Abnormal spoilage (100%)	150	150
Ending work-in-process inventory (60%)	<u>15,000</u>	<u>9,000</u>
	<u>82,150</u>	<u>74,750</u>

35. Key = b

The units should be processed after the splitoff point only if the additional cost is less than the additional revenue. Only J-60 units warrant further processing:

	<u>B-40</u>	<u>J-60</u>	<u>H102</u>
Additional revenue	\$2.25	\$1.70	\$2.50
Additional cost	\$3.05	\$1.00	\$2.50

36. Key = c

The underapplied overhead should be prorated on the basis of the percentage of production activity of the period included in work-in-process, finished goods, and cost of goods sold.

Thus, overhead should be allocated to cost of goods sold in the amount of:  
 $\$1,120,000 / (\$128,000 + \$272,000 + \$1,120,000) \times \$133,000 = \$98,000$

Since the overhead was underapplied, we should add this amount to cost of goods sold account to reach the appropriate amount to the cost of goods sold account:  
 $\$98,000 + \$1,120,000 = \$1,218,000$

37. Key = d

38. Key = a

39. Key = d

In a just-in-time system, the goal is to minimize the amount of inventory at the plant. Accordingly, lot size is based on the immediate need of the manufacturing units. In contrast, in a traditional system, raw material inventory lot size purchases are often determined on the basis of formulas, such as EOQ.

40. Key = b

41. Key = b

42. Key = d

Control environment includes attitude of management toward the concept of controls.

43. Key = c

A compliance audit is a review of controls to see how they conform with established laws, standards, and procedures.

44. Key = b

Effective segregation of duties means that no single employee has control over authorization, recording and custody. If two or more employees are in collusion, these controls can be overridden.

45. Key = d

Product X needed to fill the order:  $(100-20)=80$ . Product B needed to fill the order:  $80*5=400$ . Product B to be manufactured:  $400-100=300$ . Product E needed to fill the order:  $300*2=600$ . Product E to be purchased:  $600-50=550$ .

46. Key = c

Operational audit includes by definition an internal review of the operating performance of specific activities in comparison to organizational goals and/or other specific criteria focused on the economical and efficient use of resources.

47. Key = a

Maximum capacity would occur if there were no interruptions, which is virtually impossible. Normal and master-budget capacity focus on output demand. Thus, practical capacity, which is the maximum production output the firm can reach at the usual level of interruptions, will produce the best overhead allocation rate given the circumstances.

48. Key = c

49. Key = b

A validity test compares data against a master file for accuracy. Data that cannot possibly be correct (e.g., a nonexistent zip code) would be discovered at that time.

50. Key = a

Data encryption, which uses secret codes, ensures that data transmissions are protected from unauthorized tampering or electronic eavesdropping.

51. Key = c

Storing all files in one location undermines the concept of multiple backups inherent in the grandfather-father-son principle.

52. Key = b

- a. Incorrect. Confidentiality is not violated: such disclosure is required.
- b. Correct. Smith has not “communicate(d) information fairly and objectively.”
- c. Incorrect. FTC does not have jurisdiction in this area.
- d. Incorrect. Unauthorized charge-backs violate the Statement’s standard on Credibility.

The CMA logo consists of the letters 'CMA' in a dark green, serif font, enclosed within a white square that has a subtle drop shadow.

*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

# CMA 2010 Support Package

**Part 1: Financial Planning, Performance & Control**

**5XhcbU DfUWEi Yhcbg**

## CMA Part 1 – Financial Planning, Performance and Control Examination Practice Questions

### Section A: Planning, Budgeting and Forecasting

1. *CSO: 1A1a LOS: 1A1b*  
Cerawell Products Company is a ceramics manufacturer that is facing several challenges in its operations due to economic and industry conditions. The company is currently preparing its annual plan and budget. Which one of the following is subject to the **least** control by the management of Cerawell in the current fiscal year?
  - a. A new machine that was purchased this year has not helped reduce Cerawell's unfavorable labor efficiency variances.
  - b. A competitor has achieved an unexpected technological breakthrough that has given them a significant quality advantage, and has caused Cerawell to lose market share.
  - c. Vendors have asked that the contract price for the goods they supply to Cerawell be renegotiated and adjusted for inflation.
  - d. Experienced employees have decided to terminate their employment with Cerawell and go to work for the competition.
  
2. *CSO: 1A1a LOS: 1A1e*  
All of the following are advantages of the use of budgets in a management control system **except** that budgets
  - a. force management planning.
  - b. provide performance criteria.
  - c. promote communication and coordination within the organization.
  - d. limit unauthorized expenditures.
  
3. *CSO: 1A1b LOS: 1A1e*  
In developing the budget for the next year, which one of the following approaches would most likely result in a successful budget with the **greatest** amount of positive motivation and goal congruence?
  - a. Permit the divisional manager to develop the goal for the division that in the manager's view will generate the greatest amount of profits.
  - b. Have senior management develop the overall goals and permit the divisional manager to determine how these goals will be met.
  - c. Have the divisional and senior management jointly develop goals and objectives while constructing the corporation's overall plan of operation.
  - d. Have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.

4. *CSO: 1A1b LOS: 1A1e*  
Which one of the following statements concerning approaches for the budget development process is **correct**?
- a. The authoritative approach to budgeting discourages strict adherence to strategic organizational goals.
  - b. To prevent ambiguity, once departmental budgeted goals have been developed, they should remain fixed even if the sales forecast upon which they are based proves to be wrong in the middle of the fiscal year.
  - c. With the information technology available, the role of budgets as an organizational communication device has declined.
  - d. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.
5. *CSO: 1A1b LOS: 1A1e*  
Which one of the following items would **most** likely cause the planning and budgeting system to fail? The lack of
- a. historical financial data.
  - b. input from several levels of management.
  - c. top management support.
  - d. adherence to rigid budgets during the year.
6. *CSO: 1A1b LOS: 1A1e*  
All of the following are disadvantages of authoritative budgeting as opposed to participatory budgeting, **except** that it
- a. may result in a budget that is not possible to achieve.
  - b. may limit the acceptance of proposed goals and objectives.
  - c. reduces the communication between employees and management.
  - d. reduces the time required for budgeting.
7. *CSO: 1A1d LOS: 1A1m*  
All of the following statements concerning standard costs are correct **except** that
- a. time and motion studies are often used to determine standard costs.
  - b. standard costs are usually set for one year.
  - c. standard costs can be used in costing inventory accounts.
  - d. standard costs are usually stated in total, while budgeted costs are usually stated on a per-unit basis.

8. *CSO: 1A1d LOS: 1A1o*

One approach for developing standard costs incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management. This approach would **best** be characterized as a(n)

- a. imposed approach.
- b. authoritative approach.
- c. engineering approach.
- d. participative approach.

9. *CSO: 1A1d LOS: 1A1n*

When compared with ideal standards, practical standards

- a. produce lower per-unit product costs.
- b. result in a less desirable basis for the development of budgets.
- c. incorporate very generous allowances for spoilage and worker inefficiencies.
- d. serve as a better motivating target for manufacturing personnel.

10. *CSO: 1A1d LOS: 1A1q*

Jura Corporation is developing standards for the next year. Currently XZ-26, one of the material components, is being purchased for \$36.45 per unit. It is expected that the component's cost will increase by approximately 10% next year and the price could range from \$38.75 to \$44.18 per unit depending on the quantity purchased. The appropriate standard for XZ-26 for next year should be set at the

- a. current actual cost plus the forecasted 10% price increase.
- b. lowest purchase price in the anticipated range to keep pressure on purchasing to always buy in the lowest price range.
- c. highest price in the anticipated range to insure that there are only favorable purchase price variances.
- d. price agreed upon by the purchasing manager and the appropriate level of company management.

11. *CSO: 1A1d LOS: 1A1m*

Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?

- a. Company A does not differentiate between variable and fixed overhead in calculating its overhead variances.
- b. Company B uses the prior year's average actual cost as the current year's standard.
- c. Company C investigates only negative variances.
- d. Company D constantly revises standards to reflect learning curves.

12. *CSO: 1A1d LOS: 1A1m*

After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be **inconsistent** with the consultant's conclusion?

- a. A review of performance reports revealed the presence of many unfavorable efficiency variances.
- b. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
- c. Management noted that minimal incentive bonuses have been paid in recent periods.
- d. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases on output being followed by rapid, sustained declines.

13. *CSO: 1A2a LOS: 1A2a*

For cost estimation simple regression differs from multiple regression in that simple regression uses only

- a. one dependent variable, while multiple regression uses all available data to estimate the cost function.
- b. dependent variables, while multiple regression can use both dependent and independent variables.
- c. one independent variable, while multiple regression uses more than one independent variable.
- d. one dependent variable, while multiple regression uses more than one dependent variable.

14. *CSO: 1A2a LOS: 1A2a*

A company has accumulated data for the last 24 months in order to determine if there is an independent variable that could be used to estimate shipping costs. Three possible independent variables being considered are packages shipped, miles shipped, and pounds shipped. The quantitative technique that should be used to determine whether any of these independent variables might provide a good estimate for shipping costs is

- a. flexible budgeting.
- b. linear programming.
- c. linear regression.
- d. variable costing.



15. CSO: 1A2a LOS: 1A2b

Dawson Manufacturing developed the following multiple regression equation, utilizing many years of data, and uses it to model, or estimate, the cost of its product.

$$\text{Cost} = \text{FC} + a*L + b*M$$

Where: FC = fixed costs

L = labor rate per hour

M = material cost per pound

Which one of the following changes would have the **greatest** impact on invalidating the results of this model?

- A significant reduction in factory overheads, which are a component of fixed costs.
- Renegotiation of the union contract calling for much higher wage rates.
- A large drop in material costs, as a result of purchasing the material from a foreign source.
- A significant change in labor productivity.

16. CSO: 1A2a LOS: 1A2c

In order to analyze sales as a function of advertising expenses, the sales manager of Smith Company developed a simple regression model. The model included the following equation, which was based on 32 monthly observations of sales and advertising expenses with a related coefficient of determination of .90.

$$S = \$10,000 + \$2.50A$$

S = sales

A = advertising expenses

If Smith Company's advertising expenses in one month amounted to \$1,000, the related point estimate of sales would be

- \$2,500.
- \$11,250.
- \$12,250.
- \$12,500.

17. CSO: 1A2a LOS: 1A2a

The results of regressing Y against X are as follows.

	<u>Coefficient</u>
Intercept	5.23
Slope	1.54

When the value of X is 10, the estimated value of Y is

- a. 6.78.
- b. 8.05.
- c. 20.63.
- d. 53.84.

18. CSO: 1A2b LOS: 1A2d

Which one of the following techniques would **most** likely be used to analyze reductions in the time required to perform a task as experience with that task increases?

- a. Regression analysis.
- b. Learning curve analysis.
- c. Sensitivity analysis.
- d. Normal probability analysis.

19. CSO: 1A2b LOS: 1A2e

Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used and eight units are produced, the cumulative average direct labor hours required per unit of the product will be

- a. 5,120 hours.
- b. 6,400 hours.
- c. 8,000 hours.
- d. 10,000 hours.

20. CSO: 1A2b LOS: 1A2d

A manufacturing firm plans to bid on a special order of 80 units that will be manufactured in lots of 10 units each. The production manager estimates that the direct labor hours per unit will decline by a constant percentage each time the cumulative quantity of units produced doubles. The quantitative technique used to capture this phenomenon and estimate the direct labor hours required for the special order is

- a. cost-profit-volume analysis.
- b. the Markov process.
- c. linear programming analysis.
- d. learning curve analysis.

21. CSO: 1A2b LOS: 1A2e

A manufacturing company has the opportunity to submit a bid for 20 units of a product on which it has already produced two 10-unit lots. The production manager believes that the learning experience observed on the first two lots will continue for at least the next two lots. The direct labor required on the first two lots was as follows.

- 5,000 direct labor hours for the first lot of 10 units
- 3,000 additional direct labor hours for the second lot of 10 units

The learning rate experienced by the company on the first two lots of this product is

- a. 40.0%.
- b. 60.0%.
- c. 62.5%.
- d. 80.0%.

22. CSO: 1A2b LOS: 1A2e

Aerosub Inc. has developed a new product for spacecraft that includes the manufacture of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used, the cumulative direct labor hours required for producing a total of eight units would be

- a. 29,520 hours.
- b. 40,960 hours.
- c. 64,000 hours.
- d. 80,000 hours.

23. CSO: 1A2b LOS: 1A2e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

Cumulative number of units produced	Manufacturing Projections	
	Average cost per unit	Total costs
1	\$20,000	\$20,000
2	14,000	28,000

If Propeller manufactures eight propellers, the total manufacturing cost would be

- a. \$50,660.
- b. \$54,880.
- c. \$62,643.
- d. \$112,000.

24. CSO: 1A2b LOS: 1A2e

Martin Fabricating uses a cumulative average-time learning curve model to monitor labor costs. Data regarding two recently completed batches of a part that is used in tractor-trailer rigs is as follows.

<u>Batch Number</u>	<u>Number of Units</u>	<u>Cumulative Average Hours Per Unit</u>
1	50	20
2	50	16

If the same rate of learning continues for the next several batches produced, which of the following best describes (1) the type (i.e., degree) of learning curve that the firm is experiencing and (2) the average hours per unit for units included in the 201-400 range of units produced (i.e., the last 200 units)?

	<u>Type (Degree) of Learning Curve</u>	<u>Average Hours Per Unit for Units 201-400</u>
a.	20%	10.24.
b.	80%	10.24.
c.	80%	7.68.
d.	20%	3.84.

25. CSO: 1A2b LOS: 1A2e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

If Propeller produces eight units, the average manufacturing cost per unit will be

- a. \$1,647.
- b. \$6,860.
- c. \$9,800.
- d. \$14,000.

26. CSO: 1A2b LOS: 1A2e

In competing as a subcontractor on a military contract, Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. Accordingly, management estimates an 80% learning curve would apply to this unit. The overall contract will call for supplying eight units. Production of the first unit requires 10,000 direct labor hours. The estimated total direct labor hours required to produce the seven additional units would be

- a. 30,960 hours.
- b. 40,960 hours.
- c. 56,000 hours.
- d. 70,000 hours.

27. CSO: 1A2b LOS: 1A2e

A manufacturing company required 800 direct labor hours to produce the first lot of four units of a new motor. Management believes that a 90% learning curve will be experienced over the next four lots of production. How many direct labor hours will be required to manufacture the **next** 12 units?

- a. 1,792.
- b. 1,944.
- c. 2,016.
- d. 2,160.

28. CSO: 1A2b LOS: 1A2e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

The estimated cost of an order for seven additional propellers, after completing production of the first propeller, would be

- a. \$34,880.
- b. \$54,880.
- c. \$92,000.
- d. \$98,000.

29. CSO: 1A2c LOS: 1A2f

Sales of big-screen televisions have grown steadily during the past five years. A dealer predicted that the demand for February would be 148 televisions. Actual demand in February was 158 televisions. If the smoothing constant is  $\alpha=0.3$ , the demand forecast for March, using the exponential smoothing model, will be

- a. 148 televisions.
- b. 151 televisions.
- c. 153 televisions.
- d. 158 televisions.

30. CSO: 1A2e LOS: 1A2i

Johnson Software has developed a new software package. Johnson's sales manager has prepared the following probability distribution describing the relative likelihood of monthly sales levels and relative income (loss) for the company's new software package.

Monthly Sales In Units	Probability	Income (Loss)
10,000	.2	\$(4,000)
20,000	.3	10,000
30,000	.3	30,000
40,000	.2	60,000

If Johnson decides to market its new software package, the expected value of additional monthly income will be

- a. \$23,200.
- b. \$24,000.
- c. \$24,800.
- d. \$25,000.

31. CSO: 1A2e LOS: 1A2i

According to recent focus sessions, Norton Corporation has a "can't miss" consumer product on its hands. Sales forecasts indicate either excellent or good results, with Norton's sales manager assigning a probability of .6 to a good results outcome. The company is now studying various sales compensation plans for the product and has determined the following contribution margin data.

	Contribution Margin
If sales are excellent and	
Plan 1 is adopted	\$300,000
Plan 2 is adopted	370,000
If sales are good and	
Plan 1 is adopted	240,000
Plan 2 is adopted	180,000

On the basis of this information, which of the following statements is **correct**?

- a. Plan 2 should be adopted because it is \$10,000 more attractive than Plan 1.
- b. Plan 1 should be adopted because it is \$8,000 more attractive than Plan 2.
- c. Plan 1 should be adopted because of the sales manager's higher confidence in good results.
- d. Either Plan should be adopted, the decision being dependent on the probability of excellent sales results.

32. CSO: 1A2e LOS: 1A2i

Denton Inc. manufactures industrial machinery and requires 100,000 switches per year in its assembly process. When switches are received from a vendor they are installed in the specific machine and tested. If the switches fail, they are scrapped and the associated labor cost of \$25 is considered lost productivity. Denton purchases "off the shelf" switches as opposed to custom-made switches and experiences quality problems with some vendors' products. A decision must be made as to which vendor to buy from during the next year based on the following information.

<u>Vendor</u>	<u>Price per switch</u>	<u>Percentage expected to pass the test</u>
P	\$35	90%
Q	37	94%
R	39	97%
S	40	99%

Which vendor should Denton's controller recommend to management?

- a. Vendor P.
- b. Vendor Q.
- c. Vendor R.
- d. Vendor S.

33. CSO: 1A2e LOS: 1A2i

Scarf Corporation's controller has decided to use a decision model to cope with uncertainty. With a particular proposal, currently under consideration, Scarf has two possible actions, invest or not invest in a joint venture with an international firm. The controller has determined the following.

Action 1: Invest in the Joint Venture

Events and Probabilities:

Probability of success = 60%.

Cost of investment = \$9.5 million.

Cash flow if investment is successful = \$15.0 million.

Cash flow if investment is unsuccessful = \$2.0 million.

Additional costs to be paid = \$0

Costs incurred up to this point = \$650,000.

Action 2: Do Not Invest in the Joint Venture

Events

Costs incurred up to this point = \$650,000.

Additional costs to be paid = \$100,000.

Which one of the following alternatives correctly reflects the respective expected values of investing versus not investing?

- a. \$300,000 and \$(750,000).
- b. \$(350,000) and \$(100,000).
- c. \$300,000 and (100,000).
- d. \$(350,000) and \$(750,000).

34. CSO: 1A2e LOS: 1A2i

Allbee Company has three possible investment opportunities. The controller calculated the payoffs and probabilities, as follows.

<u>Payoffs</u>	<u>P r o b a b i l i t i e s</u>		
	<u>Investment A</u>	<u>Investment B</u>	<u>Investment C</u>
\$(20,000)	.3	.2	.3
(10,000)	.1	.2	.1
30,000	.3	.2	.2
70,000	.2	.2	.3
100,000	.1	.2	.1

The cost of investments A, B, and C are the same. Using the expected-value criterion, which one of the following rankings of these investments, from highest payoff to lowest payoff, is correct?

- a. A, B, C.
- b. B, A, C.
- c. C, A, B.
- d. B, C, A.

35. CSO: 1A2e LOS: 1A2i

The sales manager of Serito Doll Company has suggested that an expanded advertising campaign costing \$40,000 would increase the sales and profits of the company. He has developed the following probability distribution for the effect of the advertising campaign on company sales.



<u>Sales increase</u> <u>(units)</u>	<u>Probability</u>
15,000	.10
30,000	.35
45,000	.10
60,000	.25
75,000	.20

The company sells the dolls at \$5.20 each. The cost of each doll is \$3.20. Serito's expected incremental profit, if the advertising campaign is adopted, would be

- a. \$6,500.
- b. \$46,500.
- c. \$53,000.
- d. \$93,000.

36. CSO: 1A2e LOS: 1A2i

Stock X has the following probability distribution of expected future returns.

<u>Probability</u>	<u>Expected</u> <u>Return</u>
.10	-20%
.20	5%
.40	15%
.20	20%
.10	30%

The expected rate of return on stock X would be

- a. 10%.
- b. 12%.
- c. 16%.
- d. 19%.

37. CSO: 1A2e LOS: 1A2i

Which one of the following four probability distributions provides the highest expected monetary value?

<u>Alternative #1</u>		<u>Alternative #2</u>		<u>Alternative #3</u>		<u>Alternative #4</u>	
Cash		Cash		Cash		Cash	
<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>
10%	\$50,000	10%	\$50,000	10%	\$50,000	10%	\$150,000
20%	75,000	20%	75,000	20%	75,000	20%	100,000
40%	100,000	45%	100,000	40%	100,000	40%	75,000
30%	150,000	25%	150,000	30%	125,000	30%	50,000

- a. Alternative #1.
- b. Alternative #2.
- c. Alternative #3.
- d. Alternative #4.

38. CSO: 1A2e LOS: 1A2i

The Lions Club is planning to sell pretzels at a local football game and has estimated sales demand as follows.

Sales demand	8,000	10,000	12,000	15,000
Probability	10%	40%	30%	20%

The cost of the pretzels varies with the quantity purchased as follows.

Purchase quantity	8,000	10,000	12,000	15,000
Cost per unit	\$1.25	\$1.20	\$1.15	\$1.10

Any unsold pretzels would be donated to the local food bank. The calculated profits at the various sales demand levels and purchase quantities are as follows.

	<u>Expected Profits at Various Purchase Quantity Levels</u>			
<u>Sales Demand</u>	<u>8,000</u>	<u>10,000</u>	<u>12,000</u>	<u>15,000</u>
8,000	\$6,000	\$4,000	\$ 2,200	\$ (500)
10,000	6,000	8,000	6,200	3,500
12,000	6,000	8,000	10,200	7,500
15,000	6,000	8,000	10,200	13,500

Which one of the following purchase quantities would you recommend to the Lions Club?

- a. 8,000.
- b. 10,000.
- c. 12,000.
- d. 15,000.

39. CSO: 1A3a LOS: 1A3d

All of the following are criticisms of the traditional budgeting process **except** that it

- a. makes across-the-board cuts when early budget iterations show that planned expenses are too high.
- b. incorporates non-financial measures as well as financial measures into its output.
- c. overemphasizes a fixed time horizon such as one year.
- d. is not used until the end of the budget period to evaluate performance.

40. CSO: 1A3a LOS: 1A3b

Many companies use comprehensive budgeting in planning for the next year's activities. When both an operating budget and a financial budget are prepared, which one of the following is **correct** concerning the financial budget?

Included in the Financial Budget			
	<u>Capital Budget</u>	<u>Pro-forma Balance Sheet</u>	<u>Cash Budget</u>
a.	Yes	No	Yes.
b.	No	Yes	No.
c.	Yes	Yes	Yes.
d.	No	No	No.

41. CSO: 1A3a LOS: 1A3b

What would be the correct chronological order of preparation for the following budgets?

- I. Cost of goods sold budget.
- II. Production budget.
- III. Purchases budget.
- IV. Administrative budget.

- a. I, II, III, IV.
- b. III, II, IV, I.
- c. IV, II, III, I.
- d. II, III, I, IV.

42. CSO: 1A3a LOS: 1A3c

Which one of the following **best** describes the order in which budgets should be prepared when developing the annual master operating budget?

- a. Production budget, direct material budget, revenue budget.
- b. Production budget, revenue budget, direct material budget.
- c. Revenue budget, production budget, direct material budget.
- d. Revenue budget, direct material budget, production budget.

43. CSO: 1A3d LOS: 1A3a

A budgeting approach that requires a manager to justify the entire budget for each budget period is known as

- a. performance budgeting.
- b. program budgeting.
- c. zero-base budgeting.
- d. incremental budgeting.

44. CSO: 1A3f LOS: 1A3d

Rainbow Inc. recently appointed Margaret Joyce as vice president of finance and asked her to design a new budgeting system. Joyce has changed to a monthly budgeting system by dividing the company's annual budget by twelve. Joyce then prepared monthly budgets for each department and asked the managers to submit monthly reports comparing actual to budget. A sample monthly report for Department A is shown below.

Rainbow Inc.  
Monthly Report for Department A

	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
<u>Units</u>	1,000	900	100F
Variable production costs			
Direct material	\$2,800	\$2,700	\$100U
Direct labor	4,800	4,500	300U
Variable factory overhead	4,250	4,050	200U
Fixed costs			
Depreciation	3,000	2,700	300U
Taxes	1,000	900	100U
Insurance	1,500	1,350	150U
Administration	1,100	990	110U
Marketing	<u>1,000</u>	<u>900</u>	<u>100U</u>
Total costs	<u>\$19,450</u>	<u>\$18,090</u>	<u>\$1,360U</u>

This monthly budget has been imposed from the top and will create behavior problems. All of the following are causes of such problems **except**

- the use of a flexible budget rather than a fixed budget.
- top management authoritarian attitude toward the budget process.
- the inclusion of non-controllable costs such as depreciation.
- the lack of consideration for factors such as seasonality.

45. CSO: 1A3f LOS: 1A3b

When compared to static budgets, flexible budgets

- offer managers a more realistic comparison of budget and actual fixed cost items under their control.
- provide a better understanding of the capacity variances during the period being evaluated.
- encourage managers to use less fixed costs items and more variable cost items that are under their control.
- offer managers a more realistic comparison of budget and actual revenue and cost items under their control.

46. CSO: 1A3f LOS: 1A3a

Country Ovens is a family restaurant chain. Due to an unexpected road construction project, traffic passing by the Country Ovens restaurant in Newtown has significantly increased. As a result, restaurant volume has similarly increased well beyond the level expected. Which type of budget would be **most** appropriate in helping the restaurant manager plan for restaurant labor costs?

- a. Zero-based budget.
- b. Rolling budget.
- c. Activity-based budget.
- d. Flexible budget.

47. CSO: 1A4a LOS: 1A4c

Netco's sales budget for the coming year is as follows.

<u>Item</u>	<u>Volume in Units</u>	<u>Sales Price</u>	<u>Sales Revenue</u>
1	200,000	\$50	\$10,000,000
2	150,000	10	1,500,000
3	300,000	30	<u>9,000,000</u>
Total sales revenue			<u>\$20,500,000</u>

Items 1 and 3 are different models of the same product. Item 2 is a complement to Item 1. Past experience indicates that the sales volume of Item 2 relative to the sales volume of Item 1 is fairly constant. Netco is considering an 10% price increase for the coming year for Item 1, which will cause sales of Item 1 to decline by 20%, while simultaneously causing sales of Item 3 to increase by 5%. If Netco institutes the price increase for Item 1, total sales revenue will decrease by

- a. \$1,050,000.
- b. \$850,000.
- c. \$750,000.
- d. \$550,000.

48. CSO: 1A4a LOS: 1A4i

Hannon Retailing Company prices its products by adding 30% to its cost. Hannon anticipates sales of \$715,000 in July, \$728,000 in August, and \$624,000 in September. Hannon's policy is to have on hand enough inventory at the end of the month to cover 25% of the next month's sales. What will be the cost of the inventory that Hannon should budget for purchase in August?

- a. \$509,600.
- b. \$540,000.
- c. \$560,000.
- d. \$680,000.

49. *CSO: 1A4a LOS: 1A4f*

Streeter Company produces plastic microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. How many units should Streeter produce in the second quarter?

- a. 72,000 units.
- b. 75,000 units.
- c. 78,000 units.
- d. 84,000 units.

50. *CSO: 1A4a LOS: 1A4f*

Ming Company has budgeted sales at 6,300 units for the next fiscal year, and desires to have 590 good units on hand at the end of that year. Beginning inventory is 470 units. Ming has found from past experience that 10% of all units produced do not pass final inspection, and must therefore be destroyed. How many units should Ming plan to produce in the next fiscal year?

- a. 6,890.
- b. 7,062.
- c. 7,133.
- d. 7,186.

51. *CSO: 1A4a LOS: 1A4f*

Savior Corporation assembles backup systems for home computers. For the first quarter, the budget for sales is 67,500 units. Savior will finish the fourth quarter of last year with an inventory of 3,500 units, of which 200 are obsolete. The target ending inventory is 10 days of sales (based upon 360 days). What is the budgeted production for the first quarter?

- a. 75,000.
- b. 71,700.
- c. 71,500.
- d. 64,350

52. CSO: 1A4a LOS: 1A4f

Streeter Company produces microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter usually maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. However, due to a work stoppage, the finished goods inventory at the end of the first quarter is 8,000 units less than it should be. How many units should Streeter produce in the second quarter?

- a. 75,000 units.
- b. 78,000 units.
- c. 80,000 units.
- d. 86,000 units.

53. CSO: 1A4a LOS: 1A4f

Data regarding Rombus Company's budget are shown below.

Planned sales	4,000 units
Material cost	\$2.50 per pound
Direct labor	3 hours per unit
Direct labor rate	\$7 per hour
Finished goods beginning inventory	900 units
Finished goods ending inventory	600 units
Direct materials beginning inventory	4,300 units
Direct materials ending inventory	4,500 units
Materials used per unit	6 pounds

Rombus Company's production budget will show total units to be produced of

- a. 3,700.
- b. 4,000.
- c. 4,300.
- d. 4,600.

54. CSO: 1A4a LOS: 1A4f

Krouse Company is in the process of developing its operating budget for the coming year. Given below are selected data regarding the company's two products, laminated putter heads and forged putter heads, that are sold through specialty golf shops.

	Putter Heads	
	Forged	Laminated
Raw materials		
Steel	2 pounds @ \$5/lb.	1 pound @ \$5/lb.
Copper	None	1 pound @ \$15/lb.
Direct labor	1/4 hour @ \$20/hr.	1 hour @ \$22/hr.
Expected sales (units)	8,200	2,000
Selling price per unit	\$30	\$80
Ending inventory target (units)	100	60
Beginning inventory (units)	300	60
Beginning inventory (cost)	\$5,250	\$3,120

Manufacturing overhead is applied to units produced on the basis of direct labor hours. Variable manufacturing overhead is projected to be \$25,000, and fixed manufacturing overhead is expected to be \$15,000.

The estimated cost to produce one unit of the laminated putter head is

- a. \$42.
- b. \$46.
- c. \$52.
- d. \$62.

55. *CSO: 1A4a LOS: 1A4d*

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A partial schedule of cash collections for January through March of the coming year reveals the following receipts for the period.

	Cash Receipts		
	January	February	March
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000

Other information includes the following.

- Inventories are maintained at 30% of the following month's sales.
- Assume that March sales total \$150,000.

The number of units to be purchased in February is

- a. 3,850 units.
- b. 4,900 units.
- c. 6,100 units.
- d. 7,750 units.



56. CSO: 1A4a LOS: 1A4i

Stevens Company manufactures electronic components used in automobile manufacturing. Each component uses two raw materials, Geo and Clio. Standard usage of the two materials required to produce one finished electronic component, as well as the current inventory, are shown below.

<u>Material</u>	<u>Standard Per Unit</u>	<u>Price</u>	<u>Current Inventory</u>
Geo	2.0 pounds	\$15/lb.	5,000 pounds
Clio	1.5 pounds	\$10/lb.	7,500 pounds

Stevens forecasts sales of 20,000 components for the next two production periods. Company policy dictates that 25% of the raw materials needed to produce the next period's projected sales be maintained in ending direct materials inventory.

Based on this information, the budgeted direct material purchases for the coming period would be

	<u>Geo</u>	<u>Clio</u>
a.	\$450,000	\$450,000.
b.	\$675,000	\$300,000.
c.	\$675,000	\$400,000.
d.	\$825,000	\$450,000.

57. CSO: 1A4a LOS: 1A4i

Petersons Planters Inc. budgeted the following amounts for the coming year.

Beginning inventory, finished goods	\$ 10,000
Cost of goods sold	400,000
Direct material used in production	100,000
Ending inventory, finished goods	25,000
Beginning and ending work-in-process inventory	Zero

Overhead is estimated to be two times the amount of direct labor dollars. The amount that should be budgeted for direct labor for the coming year is

- a. \$315,000.
- b. \$210,000.
- c. \$157,500.
- d. \$105,000.

58. CSO: 1A4a LOS: 1A4i

Over the past several years, McFadden Industries has experienced the following regarding the company's shipping expenses.

Fixed costs	\$16,000
Average shipment	15 pounds
Cost per pound	\$.50

Shown below are McFadden's budget data for the coming year.

Number of units shipped	8,000
Number of sales orders	800
Number of shipments	800
Total sales	\$1,200,000
Total pounds shipped	9,600

McFadden's expected shipping costs for the coming year are

- a. \$4,800.
- b. \$16,000.
- c. \$20,000.
- d. \$20,800.

59. CSO: 1A4a LOS: 1A4g

Swan Company is a maker of men's slacks. The company would like to maintain 20,000 yards of fabric in ending inventory. The beginning fabric inventory is expected to contain 25,000 yards. The expected yards of fabric needed for sales is 90,000. Compute the yards of fabric that Swan needs to purchase.

- a. 85,000.
- b. 90,000.
- c. 95,000.
- d. 135,000.

60. CSO: 1A4a LOS: 1A4g

Manoli Gift Shop maintains a 35% gross profit margin percentage, and carries an ending inventory balance each month sufficient to support 30% of the next month's expected sales. Anticipated sales for the fourth quarter are as follows.

October	\$42,000
November	58,000
December	74,000

What amount of goods should Manoli Gift Shop plan to purchase during the month of November?

- a. \$40,820.
- b. \$51,220.
- c. \$52,130.
- d. \$62,800.

61. CSO: 1A4a LOS: 1A4g

In preparing the direct material purchases budget for next quarter, the plant controller has the following information available.

Budgeted unit sales	2,000
Pounds of materials per unit	4
Cost of materials per pound	\$3
Pounds of materials on hand	400
Finished units on hand	250
Target ending units inventory	325
Target ending inventory of pounds of materials	800

How many pounds of materials must be purchased?

- a. 2,475.
- b. 7,900.
- c. 8,700.
- d. 9,300.

62. CSO: 1A4a LOS: 1A4g

Playtime Toys estimates that it will sell 200,000 dolls during the coming year. The beginning inventory is 12,000 dolls; the target ending inventory is 15,000 dolls. Each doll requires two shoes which are purchased from an outside supplier. The beginning inventory of shoes is 20,000; the target ending inventory is 18,000 shoes. The number of shoes that should be purchased during the year is

- a. 396,000 shoes.
- b. 398,000 shoes.
- c. 402,000 shoes.
- d. 404,000 shoes.

63. CSO: 1A4a LOS: 1A4g

Maker Distributors has a policy of maintaining inventory at 15% of the next month's forecasted sales. The cost of Maker's merchandise averages 60% of the selling price. The inventory balance as of May 31 is \$63,000, and the forecasted dollar sales for the last seven months of the year are as follows.

June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

What is the budgeted dollar amount of Maker's purchases for July?

- a. \$355,500.
- b. \$360,000.
- c. \$364,500.
- d. \$399,000.

64. *CSO: 1A4a LOS: 1A4j*

The pro forma statement of employee benefit costs, a budget schedule that is prepared as part of an organization's annual profit plan, would include costs related to

- a. employees' gross wages and salaries and the related company-paid benefits.
- b. employees' net wages and salaries and the related company-paid benefits.
- c. all payroll related deductions withheld from employees and company-paid benefits.
- d. company-paid benefits and company-paid payroll taxes.

65. *CSO: 1A4a LOS: 1A4n*

All of the following would appear on a projected schedule of cost of goods manufactured **except** for

- a. ending work-in-process inventory.
- b. beginning finished goods inventory.
- c. the cost of raw materials used.
- d. applied manufacturing overhead.

66. *CSO: 1A4a LOS: 1A4k*

A company that manufactures furniture is establishing its budget for the upcoming year. All of the following items would appear in its overhead budget **except** for the

- a. overtime paid to the workers who perform production scheduling.
- b. cost of glue used to secure the attachment of the legs to the tables.
- c. fringe benefits paid to the production supervisor.
- d. freight charges paid for the delivery of raw materials to the company.

67. CSO: 1A4a LOS: 1A4m

Using the following budget data for Valley Corporation, which produces only one product, calculate the company's predetermined factory overhead application rate for variable overhead.

Units to be produced	11,000
Units to be sold	10,000
Indirect materials, varying with production	\$ 1,000
Indirect labor, varying with production	10,000
Factory supervisor's salary, incurred regardless of production	20,000
Depreciation on factory building and equipment	30,000
Utilities to operate factory machines	12,000
Security lighting for factory	2,000
Selling, general and administrative expenses	5,000

- a. \$2.09.
- b. \$2.30.
- c. \$4.73.
- d. \$5.20.

68. CSO: 1A4a LOS: 1A4n

Given the following data for Scurry Company, what is the cost of goods sold?

Beginning inventory of finished goods	\$100,000
Cost of goods manufactured	700,000
Ending inventory of finished goods	200,000
Beginning work-in-process inventory	300,000
Ending work-in-process inventory	50,000

- a. \$500,000.
- b. \$600,000.
- c. \$800,000.
- d. \$950,000.

69. CSO: 1A4a LOS: 1A4p

Tut Company's selling and administrative costs for the month of August, when it sold 20,000 units, were as follows.

	Costs	
	Per Unit	Total
Variable costs	\$18.60	\$372,000
Step costs	4.25	85,000
Fixed costs	<u>8.80</u>	<u>176,000</u>
Total selling and administrative costs	<u>\$31.65</u>	<u>\$633,000</u>

The variable costs represent sales commissions paid at the rate of 6.2% of sales. The step costs depend on the number of salespersons employed by the company. In August there were 17 persons on the sales force. However, two members have taken early retirement effective August 31. It is anticipated that these positions will remain vacant for several months. Total fixed costs are unchanged within a relevant range of 15,000 to 30,000 units per month. Tut is planning a sales price cut of 10%, which it expects will increase sales volume to 24,000 units per month. If Tut implements the sales price reduction, the total budgeted selling and administrative costs for the month of September would be

- a. \$652,760.
- b. \$679,760.
- c. \$714,960.
- d. \$759,600.

70. *CSO: 1A4b LOS: 1A4y*

Granite Company sells products exclusively on account, and has experienced the following collection pattern: 60% in the month of sale, 25% in the month after sale, and 15% in the second month after sale. Uncollectible accounts are negligible. Customers who pay in the month of sale are given a 2% discount. If sales are \$220,000 in January, \$200,000 in February, \$280,000 in March, and \$260,000 in April, Granite's accounts receivable balance on May 1 will be

- a. \$107,120.
- b. \$143,920.
- c. \$146,000.
- d. \$204,000.

71. *CSO: 1A4b LOS: 1A4x*

Myers Company uses a calendar-year and prepares a cash budget for each month of the year. Which one of the following items should be considered when developing July's cash budget?

- a. Federal income tax and social security tax withheld from employee's June paychecks to be remitted to the Internal Revenue Service in July.
- b. Quarterly cash dividends scheduled to be declared on July 15 and paid on August 6 to shareholders of record as of July 25.
- c. Property taxes levied in the last calendar year scheduled to be paid quarterly in the coming year during the last month of each calendar quarter.
- d. Recognition that 0.5% of the July sales on account will be uncollectible.

72. CSO: 1A4b LOS: 1A4x

Brown Company estimates that monthly sales will be as follows.

January	\$100,000
February	150,000
March	180,000

Historical trends indicate that 40% of sales are collected during the month of sale, 50% are collected in the month following the sale, and 10% are collected two months after the sale. Brown's accounts receivable balance as of December 31 totals \$80,000 (\$72,000 from December's sales and \$8,000 from November's sales). The amount of cash Brown can expect to collect during the month of January is

- a. \$76,800.
- b. \$84,000.
- c. \$108,000.
- d. \$133,000.

73. CSO: 1A4b LOS: 1A4x

Cooper Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review.

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase, and the other 50% in the following month. All payments for other expenses are made in the month incurred.

Cooper forecasts the following account balances at the beginning of the quarter.

Cash	\$100,000
Accounts receivable	300,000
Accounts payable (Inventory)	500,000

Given the above information, the projected change in cash during the coming quarter will be

- a. \$412,500.
- b. \$300,000.
- c. \$112,500.
- d. \$ -0-.

74. CSO: 1A4b LOS: 1A4x

Bootstrap Corporation anticipates the following sales during the last six months of the year.

July	\$460,000
August	500,000
September	525,000
October	500,000
November	480,000
December	450,000

20% of Bootstrap's sales are for cash. The balance is subject to the collection pattern shown below.

Percentage of balance collected in the month of sale	40%
Percentage of balance collected in the month following sale	30%
Percentage of balance collected in the second month following sale	25%
Percentage of balance uncollectible	5%

What is the planned net accounts receivable balance as of December 31?

- a. \$279,300.
- b. \$294,000.
- c. \$360,000.
- d. \$367,500.

75. CSO: 1A4b LOS: 1A4x

Projected monthly sales of Wallstead Corporation for January, February, March, and April are as follows.

January	\$300,000
February	340,000
March	370,000
April	390,000

- The company bills each month's sales on the last day of the month.
- Receivables are booked gross and credit terms of sale are: 2/10, n/30.
- 50% of the billings are collected within the discount period, 30% are collected by the end of the month, 15% are collected by the end of the second month, and 5% become uncollectible.

Budgeted cash collections for Wallstead Company during April would be



- a. \$343,300.
- b. \$347,000.
- c. \$349,300.
- d. \$353,000.

76. CSO: 1A4b LOS: 1A4x

Tip-Top Cleaning Supply carries a large number of different items in its inventory, giving the firm a competitive advantage in its industry. Below is part of Tip-Top's budget for the first quarter of next year.

Sales	\$855,000
Cost of goods sold	425,000
Rent and salary expenses	375,000

Historically, all of the sales are on account and are made evenly over the quarter. 5% of all sales are determined to be uncollectible and written off. The balance of the receivables is collected in 50 days. This sales and collection experience is expected to continue in the first quarter. The projected balance sheet for the first day of the quarter includes the following account balances.

Cash	\$ 10,000
Accounts receivable (net)	450,000
Inventory	900,000
Accounts payable	800,000

How much cash can Tip-Top anticipate collecting in the first quarter (based on a 360-day year)?

- a. \$811,000.
- b. \$830,000.
- c. \$901,250.
- d. \$902,500.

77. CSO: 1A4b LOS: 1A4x

Monroe Products is preparing a cash forecast based on the following information.

- Monthly sales: December \$200,000; January \$200,000; February \$350,000; March \$400,000.
- All sales are on credit and collected the month following the sale.
- Purchases are 60% of next month's sales and are paid for in the month of purchase.
- Other monthly expenses are \$25,000, including \$5,000 of depreciation.

If the January beginning cash balance is \$30,000, and Monroe is required to maintain a minimum cash balance of \$10,000, how much short-term borrowing will be required at the end of February?

- a. \$60,000.
- b. \$70,000.
- c. \$75,000.
- d. \$80,000.

78. CSO: 1A4b LOS: 1A4x

Prudent Corporation's budget for the upcoming accounting period reveals total sales of \$700,000 in April and \$750,000 in May. The sales cash collection pattern is

- 20% of each month's sales are cash sales.
- 5% of a month's credit sales are uncollectible.
- 70% of a month's credit sales are collected in the month of sale.
- 25% of a month's credit sales are collected in the month following the sale.

If Prudent anticipates the cash sale of a piece of old equipment in May for \$25,000, May's total budgeted cash receipts would be

- a. \$560,000.
- b. \$702,500.
- c. \$735,000.
- d. \$737,500.

79. CSO: 1A4b LOS: 1A4x

ANNCO sells products on account, and experiences the following collection schedule.

In the month of sale	10%
In the month after sale	60%
In the second month after sale	30%

At December 31, ANNCO reports accounts receivable of \$211,500. Of that amount, \$162,000 is due from December sales, and \$49,500 from November sales. ANNCO is budgeting \$170,000 of sales for January. If so, what amount of cash should be collected in January?

- a. \$129,050.
- b. \$174,500.
- c. \$211,500.
- d. \$228,500.

80. CSO: 1A4b LOS: 1A4x

Brooke Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review.

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase, and 50% in the following month. Payments for all other expenses are made in the month incurred.

Brooke forecasts the following account balances at the beginning of the quarter.

Cash	\$200,000
Accounts receivable	300,000
Accounts payable (Inventory)	400,000

Given the above information, the projected ending cash balance for February will be

- a. \$712,500.
- b. \$500,000.
- c. \$232,500.
- d. \$120,000.

81. CSO: 1A4b LOS: 1A4x

Health Foods Inc. has decided to start a cash budgeting program to improve overall cash management. Information gathered from the past year reveals the following cash collection trends.

- 40% of sales are on credit
- 50% of credit sales are collected in month of sale
- 30% of credit sales are collected first month after sale
- 15% of credit sales are collected second month after sale
- 5% of credit sales result in bad debts

Gross sales for the last five months were as follows.

January	\$220,000
February	240,000
March	250,000
April	230,000
May	260,000

Sales for June are projected to be \$255,000. Based on this information, the expected cash receipts for March would be

- a. \$230,000.
- b. \$237,400.
- c. \$242,000.
- d. \$243,200.

82. CSO: 1A4b LOS: 1A4x

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A schedule of cash collections for January through March of the coming year reveals the following receipts for the period.

	Cash Receipts		
	<u>January</u>	<u>February</u>	<u>March</u>
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000
From March sales			72,000

Other information includes the following.

- Inventories are maintained at 30% of the following month's sales.
- Tidwell desires to keep a minimum cash balance of \$15,000. Total payments in January are expected to be \$106,500, which excludes \$12,000 of depreciation expense. Any required borrowings are in multiples of \$1,000.
- The December 31 balance sheet for the preceding year revealed a cash balance of \$24,900.

Ignoring income taxes, the financing needed in January to maintain the firm's minimum cash balance is

- a. \$8,000.
- b. \$10,600.
- c. \$11,000.
- d. \$23,000.

83. CSO: 1A4b LOS: 1A4x

Data regarding Johnsen Inc.'s forecasted dollar sales for the last seven months of the year and Johnsen's projected collection patterns are as follows.

<u>Forecasted sales</u>	
June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

<u>Types of sales</u>	
Cash sales	30%
Credit sales	70%

<u>Collection pattern on credit sales (5% determined to be uncollectible)</u>	
During the month of sale	20%
During the first month following the sale	50%
During the second month following the sale	25%

Johnsen's budgeted cash receipts from sales and collections on account for September are

- \$635,000.
- \$684,500.
- \$807,000.
- \$827,000.

84. CSO: 1A4b LOS: 1A4x

The Mountain Mule Glove Company is in its first year of business. Mountain Mule had a beginning cash balance of \$85,000 for the quarter. The company has a \$50,000 short-term line of credit. The budgeted information for the first quarter is shown below.

	<u>January</u>	<u>February</u>	<u>March</u>
Sales	\$60,000	\$40,000	\$50,000
Purchases	35,000	40,000	75,000
Operating costs	25,000	25,000	25,000

All sales are made on credit and are collected in the second month following the sale. Purchases are paid in the month following the purchase, while operating costs are paid in the month that they are incurred. How much will Mountain Mule need to borrow at the end of the quarter if the company needs to maintain a minimum cash balance of \$5,000 as required by a loan covenant agreement?

- a. \$0.
- b. \$5,000.
- c. \$10,000.
- d. \$45,000.

## Section B: Performance Management

85. CSO: 1B1a LOS: 1B1d

A major **disadvantage** of a static budget is that

- a. it is more difficult to develop than a flexible budget.
- b. it is made for only one level of activity.
- c. variances tend to be smaller than when flexible budgeting is used.
- d. variances are more difficult to compute than when flexible budgeting is used.

86. CSO: 1B1a LOS: 1B1d

Arkin Co.'s controller has prepared a flexible budget for the year just ended, adjusting the original static budget for the unexpected large increase in the volume of sales. Arkin's costs are mostly variable. The controller is pleased to note that both actual revenues and actual costs approximated amounts shown on the flexible budget. If actual revenues and actual costs are compared with amounts shown on the original (static) budget, what variances would arise?

- a. Both revenue variances and cost variances would be favorable.
- b. Revenue variances would be favorable and cost variances would be unfavorable.
- c. Revenue variances would be unfavorable and cost variances would be favorable.
- d. Both revenue variances and cost variances would be unfavorable.

87. CSO: 1B1b LOS: 1B1d

Use of a standard cost system can include all of the following advantages **except** that it

- a. assists in performance evaluation.
- b. emphasizes qualitative characteristics.
- c. permits development of flexible budgeting.
- d. allows employees to better understand what is expected of them.

88. CSO: 1B1b LOS: 1B1e

Which one of the following statements is **correct** concerning a flexible budget cost formula? Variable costs are stated

- a. per unit and fixed costs are stated in total.
- b. in total and fixed costs are stated per unit.
- c. in total and fixed costs are stated in total.
- d. per unit and fixed costs are stated per unit.

89. CSO: 1B1b LOS: 1B1e

The monthly sales volume of Shugart Corporation varies from 7,000 units to 9,800 units over the course of a year. Management is currently studying anticipated selling expenses along with the related cash resources that will be needed. Which of the following types of budgets (1) should be used by Shugart in planning, and (2) will provide Shugart the **best** feedback in performance reports for comparing planned expenditures with actual amounts?

	<u>Planning</u>	<u>Performance Reporting</u>
a.	Static	Static.
b.	Static	Flexible.
c.	Flexible	Static.
d.	Flexible	Flexible.

90. CSO: 1B1b LOS: 1B1f

The following performance report was prepared for Dale Manufacturing for the month of April.

	<u>Actual Results</u>	<u>Static Budget</u>	<u>Variance</u>
Sales units	<u>100,000</u>	<u>80,000</u>	<u>20,000F</u>
Sales dollars	\$190,000	\$160,000	\$30,000F
Variable costs	125,000	96,000	29,000U
Fixed costs	<u>45,000</u>	<u>40,000</u>	<u>5,000U</u>
Operating income	<u>\$ 20,000</u>	<u>\$ 24,000</u>	<u>\$ 4,000U</u>

Using a flexible budget, Dale's total sales-volume variance is

- a. \$4,000 unfavorable.
- b. \$6,000 favorable.
- c. \$16,000 favorable.
- d. \$20,000 unfavorable.

91. CSO: 1B1b LOS: 1B1h

Of the following pairs of variances found in a flexible budget report, which pair is **most likely** to be related?

- a. Material price variance and variable overhead efficiency variance.
- b. Labor rate variance and variable overhead efficiency variance.
- c. Material usage variance and labor efficiency variance.
- d. Labor efficiency variance and fixed overhead volume variance.

92. CSO: 1B1b LOS: 1B1e

An advantage of using a flexible budget compared to a static budget is that in a flexible budget

- a. shortfalls in planned production are clearly presented.
- b. standards can easily be changed to adjust to changing circumstances.
- c. fixed cost variances are more clearly presented.
- d. budgeted costs for a given output level can be compared with actual costs for the same level of output.

93. CSO: 1B1c LOS: 1B1i

The benefits of management by exception reporting include all of the following **except** a reduction in

- a. reports production costs.
- b. information overload.
- c. reliance on advance planning.
- d. unfocused management actions.

94. CSO: 1B1d LOS: 1B1j

Lee manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of June included 10,000 hours of direct labor at \$15 per hour, \$150,000. During June, 4,500 units were produced, using 9,600 direct labor hours, incurring \$39,360 of variable overhead, and showing a variable overhead efficiency variance of \$2,400 unfavorable. The standard variable overhead rate per direct labor hour was

- a. \$3.85.
- b. \$4.00.
- c. \$4.10.
- d. \$6.00.

95. CSO: 1B1d LOS: 1B1k

MinnOil performs oil changes and other minor maintenance services (e.g., tire pressure checks) for cars. The company advertises that all services are completed within 15 minutes for each service. On a recent Saturday, 160 cars were serviced resulting in the following labor variances: rate, \$19 unfavorable; efficiency, \$14 favorable. If MinnOil's standard labor rate is \$7 per hour, determine the actual wage rate per hour and the actual hours worked.

	<u>Wage Rate</u>	<u>Hours Worked</u>
a.	\$6.55	42.00.
b.	\$6.67	42.71.
c.	\$7.45	42.00.
d.	\$7.50	38.00.



96. CSO: 1B1e LOS: 1B1l

A company applies variable overhead based upon direct labor hours and has a variable overhead efficiency variance that is \$25,000 favorable. A possible cause of this variance is that

- a. higher skilled labor was used.
- b. electricity rates were lower than expected.
- c. less supplies were used than anticipated.
- d. less units of finished goods were produced.

97. CSO: 1B1e LOS: 1B1t

A company has a raw material price variance that is unfavorable. An analysis of this variance indicates that the company's only available supplier of one of its raw materials unexpectedly raised the price of the material. The action management should take regarding this situation should be to

- a. negatively evaluate the performance of the purchasing manager.
- b. negatively evaluate the performance of the production manager.
- c. change the raw material price standard.
- d. ask the production manager to lower the material usage standard to compensate for higher material costs.

98. CSO: 1B1e LOS: 1B1t

The following information is from the accounting records of St. Charles Enterprises.

	Static	
	<u>Budget</u>	<u>Actual</u>
Sales volume (units)	<u>82,000</u>	<u>75,000</u>
Selling price/unit	\$ 15.00	\$ 15.00
Variable cost/unit	9.00	9.25
Fixed cost	280,000	285,000

A staff assistant performed a comparison of budget and actual data, and calculated an unfavorable operating income variance of \$65,750. The assistant concluded that performance did not meet expectations because there was an unfavorable variance in operating income. Which one of the following is the **best** evaluation of this preliminary conclusion?

- a. Both the conclusion and the variance calculation are correct.
- b. The conclusion is incorrect, but the variance calculation is informative.
- c. The conclusion is correct, but the variance calculation could be more informative.
- d. Both the conclusion and the variance calculation are incorrect.

99. CSO: 1B1e LOS: 1B1t

For a given time period, a company had a favorable material quantity variance, a favorable direct labor efficiency variance, and a favorable fixed overhead volume variance. Of the following, the one factor that could **not** have caused all three variances is

- a. the purchase of higher quality materials.
- b. the use of lower-skilled workers.
- c. the purchase of more efficient machinery.
- d. an increase in production supervision.

100. CSO: 1B1e LOS: 1B1a

Marten Company has a cost-benefit policy to investigate any variance that is greater than \$1,000 or 10% of budget, whichever is larger. Actual results for the previous month indicate the following.

	<u>Budget</u>	<u>Actual</u>
Raw material	\$100,000	\$89,000
Direct labor	50,000	54,000

The company should investigate

- a. neither the material variance nor the labor variance.
- b. the material variance only.
- c. the labor variance only.
- d. both the material variance and the labor variance.

101. CSO: 1B1e LOS: 1B1t

A company has a direct labor price variance that is favorable. Of the following, the **most** serious concern the company may have about this variance is that

- a. the circumstances giving rise to the favorable variance will not continue in the future.
- b. the production manager may not be using human resources as efficiently as possible.
- c. the cause of the favorable variance may result in other larger unfavorable variances in the value-chain.
- d. actual production is less than budgeted production.

102. *CSO: 1B1e LOS: 1B1k*

Frisco Company recently purchased 108,000 units of raw material for \$583,200. Three units of raw materials are budgeted for use in each finished good manufactured, with the raw material standard set at \$16.50 for each completed product. Frisco manufactured 32,700 finished units during the period just ended and used 99,200 units of raw material. If management is concerned about the timely reporting of variances in an effort to improve cost control and bottom-line performance, the materials purchase price variance should be reported as

- a. \$6,050 unfavorable.
- b. \$9,920 favorable.
- c. \$10,800 unfavorable.
- d. \$10,800 favorable.

103. *CSO: 1B1e LOS: 1B1k*

Christopher Akers is the chief executive officer of SBL Inc., a masonry contractor. The financial statements have just arrived showing a \$3,000 loss on the new stadium job that was budgeted to show a \$6,000 profit. Actual and budget information relating to the materials for the job are as follows.

	<u>Actual</u>	<u>Budget</u>
Bricks - number of bundles	3,000	2,850
Bricks - cost per bundle	\$7.90	\$8.00

Which one of the following is a **correct** statement regarding the stadium job for SBL?

- a. The price variance was favorable by \$285.
- b. The price variance was favorable by \$300.
- c. The efficiency variance was unfavorable by \$1,185.
- d. The flexible budget variance was unfavorable by \$900.

104. *CSO: 1B1e LOS: 1B1k*

A company isolates its raw material price variance in order to provide the earliest possible information to the manager responsible for the variance. The budgeted amount of material usage for the year was computed as follows.

$$150,000 \text{ units of finished goods} \times 3 \text{ pounds/unit} \times \$2.00/\text{pound} = \$900,000.$$

Actual results for the year were the following.

Finished goods produced	160,000 units
Raw materials purchased	500,000 pounds
Raw materials used	490,000 pounds
Cost per pound	\$2.02

The raw material price variance for the year was

- a. \$9,600 unfavorable.
- b. \$9,800 unfavorable.
- c. \$10,000 unfavorable.
- d. \$20,000 unfavorable.

105. *CSO: 1B1e LOS: 1B1l*

Lee Manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of May included the following information.

Direct labor (10,000 hours at \$15 per hour)	\$150,000
Variable overhead	30,000
Fixed overhead	80,000

During May, 6,000 units were produced and the direct labor efficiency variance was \$1,500 unfavorable. Based on this information, the actual number of direct labor hours used in May was

- a. 9,900 hours.
- b. 10,100 hours.
- c. 11,900 hours.
- d. 12,100 hours.

106. *CSO: 1B1e LOS: 1B1k*

At the beginning of the year, Douglas Company prepared the following monthly budget for direct materials.

<u>Units produced and sold</u>	<u>10,000</u>	<u>15,000</u>
Direct material	\$15,000	\$22,500

At the end of the month, the company's records showed that 12,000 units were produced and sold and \$20,000 was spent for direct materials. The variance for direct materials is

- a. \$2,000 favorable.
- b. \$2,000 unfavorable.
- c. \$5,000 favorable.
- d. \$5,000 unfavorable.

107. CSO: 1B1e LOS: 1B1k

Randall Company uses standard costing and flexible budgeting and is evaluating its direct labor. The total budget variance can usually be broken down into two other variances identified as the

- a. direct labor rate variance and direct labor efficiency variance.
- b. direct labor cost variance and the direct labor volume variance.
- c. direct labor rate variance and direct labor volume variance.
- d. direct labor cost variance and direct labor efficiency variance.

108. CSO: 1B1e LOS: 1B1k

Richter Company has an unfavorable materials efficiency (usage) variance for a particular month. Which one of the following is **least** likely to be the cause of this variance?

- a. Inadequate training of the direct labor employees.
- b. Poor performance of the shipping employees.
- c. Poor design of the production process or product.
- d. Poor quality of the raw materials.

109. CSO: 1B1e LOS: 1B1k

A company had a total labor variance of \$15,000 favorable and a labor efficiency variance of \$18,000 unfavorable. The labor price variance was

- a. \$3,000 favorable.
- b. \$3,000 unfavorable.
- c. \$33,000 favorable.
- d. \$33,000 unfavorable.

110. CSO: 1B1e LOS: 1B1s

Cordell Company uses a standard cost system. On January 1 of the current year, Cordell budgeted fixed manufacturing overhead cost of \$600,000 and production at 200,000 units. During the year, the firm produced 190,000 units and incurred fixed manufacturing overhead of \$595,000. The production volume variance for the year was

- a. \$5,000 unfavorable.
- b. \$10,000 unfavorable.
- c. \$25,000 unfavorable.
- d. \$30,000 unfavorable.

111. CSO: 1B1e LOS: 1B1s

Highlight Inc. uses a standard cost system and applies factory overhead to products on the basis of direct labor hours. If the firm recently reported a favorable direct labor efficiency variance, then the

- a. variable overhead spending variance must be favorable.
- b. variable overhead efficiency variance must be favorable.
- c. fixed overhead volume variance must be unfavorable.
- d. direct labor rate variance must be unfavorable.

112. CSO: 1B1e LOS: 1B1s

Harper Company's performance report indicated the following information for the past month.

Actual total overhead	\$1,600,000
Budgeted fixed overhead	1,500,000
Applied fixed overhead at \$3 per labor hour	1,200,000
Applied variable overhead at \$.50 per labor hour	200,000
Actual labor hours	430,000

Harper's total overhead spending variance for the month was

- a. \$100,000 favorable.
- b. \$115,000 favorable.
- c. \$185,000 unfavorable.
- d. \$200,000 unfavorable.

113. CSO: 1B1e LOS: 1B1s

The JoyT Company manufactures Maxi Dolls for sale in toy stores. In planning for this year, JoyT estimated variable factory overhead of \$600,000 and fixed factory overhead of \$400,000. JoyT uses a standard costing system, and factory overhead is allocated to units produced on the basis of standard direct labor hours. The denominator level of activity budgeted for this year was 10,000 direct labor hours, and JoyT used 10,300 actual direct labor hours.

Based on the output accomplished during this year, 9,900 standard direct labor hours should have been used. Actual variable factory overhead was \$596,000, and actual fixed factory overhead was \$410,000 for the year. Based on this information, the variable overhead spending variance for JoyT for this year was

- a. \$24,000 unfavorable.
- b. \$2,000 unfavorable.
- c. \$4,000 favorable.
- d. \$22,000 favorable.

114. *CSO: 1B1e LOS: 1B1s*

A company has a fixed overhead volume variance that is \$10,000 unfavorable. The **most** likely cause for this variance is that

- a. the production supervisory salaries were greater than planned.
- b. the production supervisory salaries were less than planned.
- c. more was produced than planned.
- d. less was produced than planned.

115. *CSO: 1B1e LOS: 1B1s*

When using a flexible budgeting system, the computation for the variable overhead spending variance is the difference between

- a. actual variable overhead and the previously budgeted amount.
- b. the previously budgeted amount and actual inputs times the budgeted rate.
- c. the amount applied to work-in-process and actual variable overhead.
- d. actual variable overhead and actual inputs times the budgeted rate.

116. *CSO: 1B1e LOS: 1B1t*

Fortune Corporation's Marketing Department recently accepted a rush order for a nonstock item from a valued customer. The Marketing Department filed the necessary paperwork with the Production Department, which complained greatly about the lack of time to do the job the right way. Nevertheless, the Production Department accepted the manufacturing commitment and filed the required paperwork with the Purchasing Department for the needed raw materials. A purchasing clerk temporarily misplaced the paperwork. By the time the paperwork was found, it was too late to order from the company's regular supplier. A new supplier was located, and that vendor quoted a very attractive price. The materials arrived and were rushed into production, bypassing the normal inspection processes (as directed by the Production Department supervisor) to make up for lost time. Unfortunately, the goods were of low quality and created considerable difficulty for Fortune's assembly-line personnel. Which of the following **best** indicates the responsibility for the materials usage variance in this situation?

- a. Purchasing.
- b. Purchasing and Marketing.
- c. Marketing and Production.
- d. Purchasing, Marketing, and Production.

117. CSO: 1B1e LOS: 1B1t

Johnson Inc. has established per unit standards for material and labor for its production department based on 900 units normal production capacity as shown below.

3 lbs. of direct materials @ \$4 per lb.	\$12
1 direct labor hour @ \$15 per hour	<u>15</u>
Standard cost per unit	<u>\$27</u>

During the year 1,000 units were produced. The accounting department has charged the production department supervisor with the following unfavorable variances.

<u>Materials Quantity Variance</u>		<u>Material Price Variance</u>	
Actual usage	3,300 lbs.	Actual cost	\$4,200
Standard usage	3,000 lbs.	Standard cost	4,000
Unfavorable	300 lbs.	Unfavorable	\$200

Bob Sterling, the production supervisor, has received a memorandum from his boss stating that he did not meet the established standards for material prices and quantity and corrective action should be taken. Sterling is very unhappy about the situation and is preparing to reply to the memorandum explaining the reasons for his dissatisfaction. All of the following are valid reasons for Sterling's dissatisfaction **except** that the

- material price variance is the responsibility of the purchasing department.
- cause of the unfavorable material usage variance was the acquisition of substandard material.
- standards have not been adjusted to the engineering changes.
- variance calculations fail to properly reflect that actual production exceeded normal production capacity.

118. CSO: 1B1e LOS: 1B1t

During the month of May, Tyler Company experienced a significant unfavorable material efficiency variance in the production of its single product at one of Tyler's plants. Which one of the following reasons would be **least** likely to explain why the unfavorable variance arose?

- Inferior materials were purchased.
- Actual production was lower than planned production.
- Workers used were less-skilled than expected.
- Replacement production equipment had just been installed.



119. CSO: 1B2a LOS: 1B2a

Sara Bellows, manager of the telecommunication sales team, has the following department budget.

Billings - long distance	\$350,000
Billings - phone card	75,000
Billings - toll free	265,000

Her responsibility center is **best** described as a

- a. cost center.
- b. revenue center.
- c. profit center.
- d. investment center.

120. CSO: 1B2a LOS: 1B2b

The production manager of the Super T-shirt Company is responsible for the activity of her department and the costs associated with production. Super T adheres to a responsibility centered budget process, and the manager's performance is measured by how well she performs to budget. Recently, the dark horse team won the local college basketball tournament. As a result, the sales department, which operates as a profit center, received an order for 10,000 t-shirts, but only if they could be delivered in three days. The production manager said she could meet the schedule, but only by incurring overtime pay that would cause her to be over budget for hourly wages paid. What would be the **best** course of action for the sales department and the production manager to undertake in this case?

- a. Accept the order and overrun the production manager's budget.
- b. Refuse the overtime and produce only what the production department is capable of while staying within the budget.
- c. Accept the order and ignore the effect on the production department budget when conducting the performance review.
- d. Charge the overtime to the sales department's budget.

121. CSO: 1B2a LOS: 1B2f

Most firms allocate corporate and other support costs to divisions and departments for all of the following reasons **except** to

- a. remind profit-center managers that earnings must be adequate to cover some share of the indirect costs.
- b. stimulate profit-center managers to put pressure on central managers to control service costs.
- c. create competition between divisions and departments, and their managers.
- d. fix accountability and evaluate profit centers.

122. CSO: 1B2a LOS: 1B2f

Which one of the following allocation approaches will ensure that the production departments do not underestimate their planned usage of service at the start of the budget period as well as make the service departments cost efficient?

- a. The use of actual rates and actual hours for both fixed and variable costs.
- b. Budgeted rates and standard hours allowed for output attained for variable costs and budgeted rates and capacity available for fixed costs.
- c. The use of rates and quantities based on long-term historical averages for both variable and fixed costs.
- d. The use of a budgeted lump-sum amount based on estimates provided by the production departments for both variable and fixed costs.

123. CSO: 1B2b LOS: 1B2h

Which one of the following is an **incorrect** description of transfer pricing?

- a. It measures the value of goods or services furnished by a profit center to other responsibility centers within a company.
- b. If a market price exists, this price may be used as a transfer price.
- c. It measures exchanges between a company and external customers.
- d. If no market price exists, the transfer price may be based on cost.

124. CSO: 1B2b LOS: 1B2i

Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10

Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm. The **best** process to determine the price ultimately charged by the Fabrication Division to the Assembly Division for the circuit board is to

- a. establish the price by top management.
- b. establish the price by an arbitration committee.
- c. establish the price through negotiations between the Fabrication's and Electronic Assembly's Division management.
- d. set the price equal to the price that would be charged if the Fabrication Department had no excess capacity.

125. CSO: 1B2b LOS: 1B2i

Happy Time Industries uses segment reporting for all of its decentralized divisions. It has several products that are transferred from one division to other divisions. Happy Time wants to motivate the manager of the selling division to produce efficiently. Assuming the following methods are available, the **optimal** transfer pricing method should be a

- a. cost-based transfer price that uses actual amounts.
- b. cost-based transfer price that uses budgeted amounts.
- c. variable cost-based transfer price that uses actual amounts.
- d. market-based transfer price.

126. CSO: 1B2b LOS: 1B2k

Morrison's Plastics Division, a profit center, sells its products to external customers as well as to other internal profit centers. Which one of the following circumstances would justify the Plastics Division selling a product internally to another profit center at a price that is below the market-based transfer price?

- a. The buying unit has excess capacity.
- b. The selling unit is operating at full capacity.
- c. Routine sales commissions and collection costs would be avoided.
- d. The profit centers' managers are evaluated on the basis of unit operating income.

127. CSO: 1B2b LOS: 1B2i

With respect to a firm's transfer pricing policy, an advantage of using a dual pricing arrangement is that it

- a. provides an incentive for the supplying subunit to control costs.
- b. exposes the supplying subunit to the discipline of market prices.
- c. promotes goal congruence between the supplying and buying subunits of the firm.
- d. simplifies tax calculations when the buying and supplying subunits are taxed in different jurisdictions.

128. CSO: 1B2b LOS: 1B2j

Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10

Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm. To optimize the overall goals of Manhattan, the minimum price to be charged for the board from the Fabrication Division to the Electronic Assembly Division should be

- a. \$21.
- b. \$26.
- c. \$31.
- d. \$46.

129. *CSO: 1B2b LOS: 1B2k*

Kern Manufacturing has several divisions and evaluates performance using segment income. Since sales include transfers to other divisions, Kern has established a price for internal sales as cost plus 10%. Red Division has requested 10,000 units of Green Division's product. Green Division is selling its product externally at a 60% markup over cost. The corporate policy will encourage the Green Division to

- a. transfer the product to the Red Division because all costs are being covered and the division will earn a 10% profit.
- b. reject the sale to the Red Division because it does not provide the same markup as external sales.
- c. accept the sale to the Red Division if it is operating at full capacity and the sale will contribute to fixed costs.
- d. transfer the product to the Red Division if it does not require the Green Division to give up any external sales.

130. *CSO: 1B3b LOS: 1B3r*

Consider the following categories of performance measures.

- I. Profitability measures.
- II. Customer-satisfaction measures.
- III. Efficiency, quality, and time measures.
- IV. Innovation measures.

A cruise line operates on a national scale in a very competitive marketplace. In view of this information, which measures should the company use in the evaluation of its managers?

- a. I only.
- b. I and II.
- c. II and III.
- d. I, II, III, and IV.

131. *CSO: 1B3b LOS: 1B3a*  
All of the following are considered appropriate goals for measuring a division manager's efficiency for a budgeting period **except**
- budgeted operating income.
  - a targeted share of the market.
  - earnings per share projections.
  - a reduction in the organizational structure (fewer employees doing a given amount of work).
132. *CSO: 1B3b LOS: 1B3a*  
David Burke is manager of claims processing for Continental Health Care System. His performance is evaluated using various measures agreed upon in advance with Diane Lewis, general manager. Lewis asked Burke to recommend several measures to evaluate the performance of his unit next year. Which one of the following performance measures would likely have the **least** positive effect on Burke's motivation and performance?
- Processing cost per claim.
  - Average processing time per claim.
  - Percentage of claims processed accurately the first time.
  - Total dollar amount of claims processed per month.
133. *CSO: 1B3b LOS: 1B3a*  
Paul Cooper, shipping manager for DFG Distributors, is responsible for managing the staff and all related transportation equipment to fill orders for bakery products from local retailers and deliver the products to those retailers. Which one of the following groups of three performance measures **most** likely would result in the highest level of goal congruence?
- Labor cost per order; transportation cost per order; number of orders completed per day.
  - The percentage of orders filled on time; the percentage of orders filled accurately; average cost to fill and deliver an order.
  - Customer satisfaction; elapsed time to complete an order; percentage of orders filled accurately.
  - Orders completed per employee per day; employee injuries per hour worked; number of vehicle accidents per year.
134. *CSO: 1B3b LOS: 1B3a*  
P.C. Programs Inc. produces software for individual users and small businesses. Rita Morgan manages the customer hot line department for the firm and is responsible for answering customer questions related to software products produced by all divisions of the firm. For purposes of promoting goal congruence, which one of the following would be the **least** appropriate measure of her performance?

- a. Average time to provide an answer or solution to a customer.
- b. Number of calls to the hot line for each new release of software.
- c. Average time a customer is on hold.
- d. Number of customer complaints due to incorrect responses given to customers.

135. CSO: 1B3b LOS: 1B3a

Which one of the following should be used for evaluating the performance of the Repair and Maintenance Department that repairs production equipment in a firm devoted to making keyboards for computers?

- a. The variance between the firm's budgeted and actual net income.
- b. The total factory overhead variances.
- c. The fixed overhead volume variances.
- d. The response time and degree of satisfaction among the production departments.

136. CSO: 1B3b LOS: 1B3a

Albert Hathaway recently joined Brannen University as the chief information officer of the University Computing Services Department. His assigned task is to help reduce the recurrent problem of cost overruns due to uncontrolled computer usage by the user community, while at the same time not curtailing the use of information technology for research and teaching. To ensure goal congruence, which one of the following algorithms should be used to allocate the cost of the University Computing Services Department to other departments within the university?

- a. Actual rate times actual hours of computer usage.
- b. Actual rate times budgeted hours of computer usage.
- c. Budgeted rate times actual hours of computer usage.
- d. Budgeted rate times budgeted hours of computer usage.

137. CSO: 1B3d LOS: 1B3i

For several years, Northern Division of Marino Company has maintained a positive residual income. Northern is currently considering investing in a new project that will lower the division's overall return on investment (ROI) but increase its residual income. What is the relationship between the expected rate of return on the new project, the firm's cost of capital, and the division's current ROI?

- a. The expected rate of return on the new project is higher than the division's current return on investment, but lower than the firm's cost of capital.
- b. The firm's cost of capital is higher than the expected rate of return on the new project, but lower than the division's current return on investment.
- c. The division's current return on investment is higher than the expected rate of return on the new project, but lower than the firm's cost of capital.
- d. The expected rate of return on the new project is higher than the firm's cost of capital, but lower than the division's current return on investment.

138. CSO: 1B3d LOS: 1B3f

KHD Industries is a multidivisional firm that evaluates its managers based on the return on investment (ROI) earned by their divisions. The evaluation and compensation plans use a targeted ROI of 15% (equal to the cost of capital) and managers receive a bonus of 5% of basic compensation for every one-percentage point that the division's ROI exceeds 15%. David Evans, manager of the Consumer Products Division, has made a forecast of the division's operations and finances for next year that indicates the ROI would be 24%. In addition, new short-term programs were identified by the Consumer Products Division and evaluated by the finance staff as follows.

<u>Program</u>	<u>Projected ROI</u>
A	13%
B	19%
C	22%
D	31%

Assuming no restrictions on expenditures, what is the optimal mix of new programs that would add value to KHD Industries?

- a. A, B, C, and D.
- b. B, C, and D only.
- c. C and D only.
- d. D only.

139. CSO: 1B3d LOS: 1B3f

Performance results for four geographic divisions of a manufacturing company are shown below.

<u>Division</u>	<u>Target Return on Investment</u>	<u>Actual Return on Investment</u>	<u>Return on Sales</u>
A	18%	18.1%	8%
B	16	20.0	8
C	14	15.8	6
D	12	11.0	9

The division with the **best** performance is

- a. Division A.
- b. Division B.
- c. Division C.
- d. Division D.

140. *CSO: 1B3d LOS: 1B3f*

Vincent Hospital has installed a new computer system. The system was designed and constructed based on the anticipated number of hours of usage required by the various hospital departments according to projections made by the departmental managers. Virtually all of the operating costs of the system are fixed. What would be the **most** systematic and rational manner in which to allocate the new computer system costs to the various hospital departments?

- a. To each department equally.
- b. By the anticipated number of hours of usage.
- c. By actual usage by each department.
- d. By the revenue generated in each department.

141. *CSO: 1B3d LOS: 1B3i*

Oakmont Company has two divisions, Household Appliances and Construction Equipment. The manager of the Household Appliances Division is evaluated on the basis of return on investment (ROI). The manager of the Construction Equipment Division is evaluated on the basis of residual income. The cost of capital has been 12% and the return on investment has been 16% for the two divisions. Each manager is currently considering a project with a 14% rate of return. According to the current evaluation system for managers, which manager(s) would have incentive to undertake the project?

- a. Both managers would have incentive to undertake the project.
- b. Neither manager would have incentive to undertake the project.
- c. The manager of the Household Appliances Division would have incentive to undertake the project while the manager of the Construction Equipment Division would not have incentive to undertake the project.
- d. The manager of the Construction Equipment Division would have incentive to undertake the project while the manager of the Household Appliances Division would not have incentive to undertake the project.

142. *CSO: 1B3e LOS: 1B3g*

A company is concerned that its divisional managers are not making decisions that are in the **best** interests of the overall corporation. In order to prevent this, the company should use a performance evaluation system that focuses on

- a. flexible budget variances.
- b. operating income.
- c. controllable costs.
- d. residual income.



143. CSO: 1B3h LOS: 1B3m

To insure that a divisional vice president places appropriate focus on both the short-term and the long-term objectives of the division, the **best** approach would be to evaluate the vice president's performance by using

- a. return on investment (ROI) which permits easy and quick comparisons to other similar divisions.
- b. residual income since it will eliminate the rejection of capital investments that have a return less than ROI but greater than the cost of capital.
- c. division segment margin or profit margin.
- d. financial and nonfinancial measures, including the evaluation of quality, customer satisfaction, and market performance.

144. CSO: 1B3i LOS: 1B3n

The balanced scorecard provides an action plan for achieving competitive success by focusing management attention on critical success factors. Which one of the following is **not** one of the competitive success factors commonly focused upon in the balanced scorecard?

- a. Competitor business strategies.
- b. Financial performance measures.
- c. Internal business processes.
- d. Employee innovation and learning.

145. CSO: 1B3i LOS: 1B3n

Which one of the following statements about a balanced scorecard is **incorrect**?

- a. It seeks to address the problems associated with traditional financial measures used to assess performance.
- b. The notion of value chain analysis plays a major role in the drawing up of a balanced scorecard.
- c. It relies on the perception of the users with regard to service provided.
- d. It is directly derived from the scientific management theories.

## Section C: Cost Management

146. CSO: 1C1a LOS: 1C1a

Manchester Airlines is in the process of preparing a contribution margin income statement that will allow a detailed look at its variable costs and profitability of operations. Which one of the following cost combinations should be used to evaluate the variable cost per flight of the company's Boston-Las Vegas flights?

- a. Flight crew salary, fuel, and engine maintenance.
- b. Fuel, food service, and airport landing fees.
- c. Airplane depreciation, baggage handling, and airline marketing.
- d. Communication system operation, food service, and ramp personnel.

147. CSO: 1C1a LOS: 1C1a

Which one of the following items would **not** be considered a manufacturing cost?

- a. Cream for an ice cream maker.
- b. Sales commissions for a car manufacturer.
- c. Plant property taxes for an ice cream maker.
- d. Tires for an automobile manufacturer.

148. CSO: 1C1a LOS: 1C1a

Taylor Corporation is determining the cost behavior of several items in order to budget for the upcoming year. Past trends have indicated the following dollars were spent at three different levels of output.

	Unit Levels		
	10,000	12,000	15,000
Cost A	\$25,000	\$29,000	\$35,000
Cost B	10,000	15,000	15,000
Cost C	15,000	18,000	22,500

In establishing a budget for 14,000 units, Taylor should treat Costs A, B, and C, respectively, as

- a. semivariable, fixed, and variable.
- b. variable, fixed, and variable.
- c. semivariable, semivariable, and semivariable.
- d. variable, semivariable, and semivariable.

149. CSO: 1C1a LOS: 1C1a

Which one of the following refers to a cost that remains the same as the volume of activity decreases within the relevant range?

- a. Average cost per unit.
- b. Variable cost per unit.
- c. Unit fixed cost.
- d. Total variable cost.

150. CSO: 1C1a LOS: 1C1a

Fowler Co. provides the following summary of its total budgeted production costs at three production levels.

	<u>Volume in Units</u>		
	<u>1,000</u>	<u>1,500</u>	<u>2,000</u>
Cost A	\$1,420	\$2,130	\$2,840
Cost B	\$1,550	\$2,200	\$2,900
Cost C	\$1,000	\$1,000	\$1,000
Cost D	\$1,630	\$2,445	\$3,260

The cost behavior of each of the Costs A through D, respectively, is

- a. semi-variable, variable, fixed, and variable.
- b. variable, semi-variable, fixed, and semi-variable.
- c. variable, fixed, fixed, and variable.
- d. variable, semi-variable, fixed, and variable.

151. CSO: 1C1a LOS: 1C1a

Roberta Johnson is the manager of SleepWell Inn, one of a chain of motels located throughout the United States. An example of an operating cost at SleepWell that is semivariable is

- a. the security guard's salary.
- b. electricity.
- c. postage for reservation confirmations.
- d. local yellow pages advertising.

152. CSO: 1C1a LOS: 1C1b

The marketing manager of Ames Company has learned the following about a new product that is being introduced by Ames. Sales of this product are planned at \$100,000 for the first year. Sales commission expense is budgeted at 8% of sales plus the marketing manager's incentive budgeted at an additional ½%. The preparation of a product brochure will require 20 hours of marketing salaried staff time at an average rate of \$100 per hour, and 10 hours, at \$150 per hour, for an outside illustrator's effort. The variable marketing cost for this new product will be

- a. \$8,000.
- b. \$8,500.
- c. \$10,000.
- d. \$10,500.

153. CSO: 1C1a LOS: 1C1c

Indirect and common costs often make up a significant portion of the cost of a product. All of the following are reasons for indirect cost allocation to cost objects **except** to

- a. reduce total costs identified with products.
- b. measure income and assets for external reporting purposes.
- c. justify costs for reimbursement purposes.
- d. provide information for economic decision making.

154. CSO: 1C1a LOS: 1C1a

The relevant range refers to the activity levels over which

- a. cost relationships hold constant.
- b. costs fluctuate.
- c. production varies.
- d. relevant costs are incurred.

155. CSO: 1C1a LOS: 1C1a

Cell Company has discovered that the cost of processing customer invoices is strictly variable within the relevant range. Which one of the following statements concerning the cost of processing customer invoices is **incorrect**?

- a. The total cost of processing customer invoices will increase as the volume of customer invoices increases.
- b. The cost per unit for processing customer invoices will decline as the volume of customer invoices increases.
- c. The cost of processing the 100th customer invoice will be the same as the cost of processing the first customer invoice.
- d. The average cost per unit for processing a customer invoice will equal the incremental cost of processing one more customer invoice.

156. CSO: 1C1a LOS: 1C1a

When identifying fixed and variable costs, which one of the following is a typical assumption concerning cost behavior?

- a. General and administrative costs are assumed to be variable costs.
- b. Cost behavior is assumed to be realistic for all levels of activity from zero to maximum capacity.
- c. Total costs are assumed to be linear when plotted on a graph.
- d. The relevant time period is assumed to be five years.

157. CSO: 1C1a LOS: 1C1a

Lar Company has found that its total electricity cost has both a fixed component and a variable component within the relevant range. The variable component seems to vary directly with the number of units produced. Which one of the following statements concerning Lar's electricity cost is **incorrect**?

- a. The total electricity cost will increase as production volume increases.
- b. The total electricity cost per unit of production will increase as production volume increases.
- c. The variable electricity cost per unit of production will remain constant as production volume increases.
- d. The fixed electricity cost per unit of production will decline as production volume increases.

158. CSO: 1C1b LOS: 1C1e

Kimber Company has the following unit cost for the current year.

Raw material	\$20.00
Direct labor	25.00
Variable manufacturing overhead	10.00
Fixed manufacturing overhead	<u>15.00</u>
Total unit cost	<u>\$70.00</u>

Fixed manufacturing cost is based on an annual activity level of 8,000 units. Based on these data, the total manufacturing cost expected to be incurred to manufacture 9,000 units in the current year is

- a. \$560,000.
- b. \$575,000.
- c. \$615,000.
- d. \$630,000.

159. CSO: 1C1b LOS: 1C1a

A review of Plunkett Corporation's accounting records for last year disclosed the following selected information.

Variable costs	
Direct materials used	\$ 56,000
Direct labor	179,100
Manufacturing overhead	154,000
Selling costs	108,400
Fixed costs	
Manufacturing overhead	267,000
Selling costs	121,000
Administrative costs	235,900

In addition, the company suffered a \$27,700 uninsured factory fire loss during the year. What were Plunkett's product costs and period costs for last year?

	<u>Product</u>	<u>Period</u>
a.	\$235,100	\$914,000.
b.	\$497,500	\$651,600.
c.	\$656,100	\$493,000.
d.	\$683,800	\$465,300.

160. CSO: 1C1b LOS: 1C1e

Normal costing systems are said to offer a user several distinct benefits when compared with actual costing systems. Which one of the following is **not** a benefit associated with normal costing systems?

- a. More timely costing of jobs and products.
- b. A smoothing of product costs throughout the period.
- c. Improved accuracy of job and product costing.
- d. A more economical way of attaching overhead to a job or product.

161. CSO: 1C1b LOS: 1C1e

From the following budgeted data, calculate the budgeted indirect cost rate that would be used in a normal costing system.

Total direct labor hours	250,000
Direct costs	\$10,000,000
Total indirect labor hours	50,000
Total indirect-labor-related costs	\$ 5,000,000
Total indirect non-labor related costs	\$ 7,000,000

- a. \$20.
- b. \$28.
- c. \$40.
- d. \$48.

162. CSO: 1C1c LOS: 1C1e

Merlene Company uses a standard cost accounting system. Data for the last fiscal year are as follows.

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50

	<u>Per Unit</u>
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*

Budgeted selling and administrative costs (all fixed) \$45,000

\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

The amount of operating income earned by Merlene for the last fiscal year using variable costing was

- a. \$21,500.
- b. \$22,500.
- c. \$28,000.
- d. \$31,000.

163. CSO: 1C1c LOS: 1C1e

Loyal Co. produces three types of men's undershirts: T-shirts, V-neck shirts, and athletic shirts. In the Folding and Packaging Department, operations costing is used to apply costs to individual units, based on the standard time allowed to fold and package each type of undershirt. The standard time to fold and package each type of undershirt is as follows.

T-shirt	40 seconds per shirt
V-neck shirt	40 seconds per shirt
Athletic shirt	20 seconds per shirt

During the month of April, Loyal produced and sold 50,000 T-shirts, 30,000 V-neck shirts, and 20,000 athletic shirts. If costs in the Folding and Packaging Department were \$78,200 during April, how much folding and packaging cost should be applied to each T-shirt?

- a. \$.52134.
- b. \$.6256.
- c. \$.7820.
- d. \$.8689.

164. CSO: 1C1d LOS: 1C1g

Dremmon Corporation uses a standard cost accounting system. Data for the last fiscal year are as follows.

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50
 <u>Per Unit</u>	
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*

Budgeted selling and administrative costs (all fixed)	\$45,000
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\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

Assuming that Dremmon used absorption costing, the amount of operating income earned in the last fiscal year was

- a. \$21,500.
- b. \$27,000.
- c. \$28,000.
- d. \$30,000.



165. CSO: 1C1d LOS: 1C1g

Chassen Company, a cracker and cookie manufacturer, has the following unit costs for the month of June.

<u>Variable manufacturing cost</u>	<u>Variable marketing cost</u>	<u>Fixed manufacturing cost</u>	<u>Fixed marketing cost</u>
\$5.00	\$3.50	\$2.00	\$4.00

A total of 100,000 units were manufactured during June of which 10,000 remain in ending inventory. Chassen uses the first-in, first-out (FIFO) inventory method, and the 10,000 units are the only finished goods inventory at month-end. Using the full absorption costing method, Chassen's finished goods inventory value would be

- a. \$50,000.
- b. \$70,000.
- c. \$85,000.
- d. \$145,000.

166. CSO: 1C1d LOS: 1C1g

Consider the following situation for Weisman Corporation for the prior year.

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing costs	10
Fixed manufacturing costs	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

The operating income for Weisman for the prior year using absorption costing was

- a. \$13,600.
- b. \$14,200.
- c. \$15,300.
- d. \$15,840.

167. CSO: 1C1d LOS: 1C1f

When comparing absorption costing with variable costing, the difference in operating income can be explained by the difference between the

- units sold and the units produced, multiplied by the unit sales price.
- ending inventory in units and the beginning inventory in units, multiplied by the budgeted fixed manufacturing cost per unit.
- ending inventory in units and the beginning inventory in units, multiplied by the unit sales price.
- units sold and the units produced, multiplied by the budgeted variable manufacturing cost per unit.

168. CSO: 1C1d LOS: 1C1g

Mill Corporation had the following unit costs for the recently concluded calendar year.

	<u>Variable</u>	<u>Fixed</u>
Manufacturing	\$8.00	\$3.00
Nonmanufacturing	\$2.00	\$5.50

Inventory for Mill's sole product totaled 6,000 units on January 1 and 5,200 units on December 31. When compared to variable costing income, Mill's absorption costing income is

- \$2,400 lower.
- \$2,400 higher.
- \$6,800 lower.
- \$6,800 higher.

169. CSO: 1C1d LOS: 1C1f

Which of the following correctly shows the treatment of (1) factory insurance, (2) direct labor, and (3) finished goods shipping costs under absorption costing and variable costing?

	<u>Absorption Costing</u>		<u>Variable Costing</u>	
	<u>Product Cost</u>	<u>Period Cost</u>	<u>Product Cost</u>	<u>Period Cost</u>
a.	1, 2	3	2	1, 3.
b.	2	1, 3	1, 2	3.
c.	1, 2	3	1	2, 3.
d.	1	2, 3	2, 3	1.

170. CSO: 1C1d LOS: 1C1g

Troughton Company manufactures radio-controlled toy dogs. Summary budget financial data for Troughton for the current year are as follows.

Sales (5,000 units at \$150 each)	\$750,000
Variable manufacturing cost	400,000
Fixed manufacturing cost	100,000
Variable selling and administrative cost	80,000
Fixed selling and administrative cost	150,000

Troughton uses an absorption costing system with overhead applied based on the number of units produced, with a denominator level of activity of 5,000 units. Underapplied or overapplied manufacturing overhead is written off to cost of goods sold in the year incurred. The \$20,000 budgeted operating income from producing and selling 5,000 toy dogs planned for this year is of concern to Trudy George, Troughton's president. She believes she could increase operating income to \$50,000 (her bonus threshold) if Troughton produces more units than it sells, thus building up the finished goods inventory. How much of an increase in the number of units in the finished goods inventory would be needed to generate the \$50,000 budgeted operating income?

- a. 556 units.
- b. 600 units.
- c. 1,500 units.
- d. 7,500 units.

171. CSO: 1C1e LOS: 1C1f

If a manufacturing company uses variable costing to cost inventories, which of the following costs are considered inventoriable costs?

- a. Only raw material, direct labor, and variable manufacturing overhead costs.
- b. Only raw material, direct labor, variable and fixed manufacturing overhead costs.
- c. Only raw material, direct labor, variable manufacturing overhead and variable selling and administrative costs.
- d. Only raw material and direct labor costs.

172. CSO: 1C1e LOS: 1C1f

Xylon Company uses direct (variable) costing for internal reporting and absorption costing for the external financial statements. A review of the firm's internal and external disclosures will likely find

- a. a difference in the treatment of fixed selling and administrative costs.
- b. a higher inventoriable unit cost reported to management than to the shareholders.
- c. a contribution margin rather than gross margin in the reports released to shareholders.
- d. internal income figures that vary closely with sales and external income figures that are influenced by both units sold and productive output.

173. CSO: 1C1e LOS: 1C1g

Bethany Company has just completed the first month of producing a new product but has not yet shipped any of this product. The product incurred variable manufacturing costs of \$5,000,000, fixed manufacturing costs of \$2,000,000, variable marketing costs of \$1,000,000, and fixed marketing costs of \$3,000,000.

If Bethany uses the variable cost method to value inventory, the inventory value of the new product would be

- a. \$5,000,000.
- b. \$6,000,000.
- c. \$8,000,000.
- d. \$11,000,000.

174. CSO: 1C1e LOS: 1C1g

Consider the following situation for Donaldson Company for the prior year.

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing costs	10
Fixed manufacturing costs	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

Assuming that Donaldson uses variable costing, the operating income for the prior year was

- a. \$13,600.
- b. \$14,200.
- c. \$14,800.
- d. \$15,300.

175. *CSO: 1C1e LOS: 1C1g*

During the month of May, Robinson Corporation sold 1,000 units. The cost per unit for May was as follows.

	<u>Cost Per Unit</u>
Direct materials	\$ 5.50
Direct labor	3.00
Variable manufacturing overhead	1.00
Fixed manufacturing overhead	1.50
Variable administrative costs	.50
Fixed administrative costs	<u>3.50</u>
Total	<u>\$15.00</u>

May's income using absorption costing was \$9,500. The income for May, if variable costing had been used, would have been \$9,125. The number of units Robinson produced during May was

- a. 750 units.
- b. 925 units.
- c. 1,075 units.
- d. 1,250 units.

176. *CSO: 1C1e LOS: 1C1f*

Which one of the following is the **best** reason for using variable costing?

- a. Fixed factory overhead is more closely related to the capacity to produce than to the production of specific units.
- b. All costs are variable in the long term.
- c. Variable costing is acceptable for income tax reporting purposes.
- d. Variable costing usually results in higher operating income than if a company uses absorption costing.

177. *CSO: 1C1e LOS: 1C1f*

Dawn Company has significant fixed overhead costs in the manufacturing of its sole product, auto mufflers. For internal reporting purposes, in which one of the following situations would ending finished goods inventory be higher under direct (variable) costing rather than under absorption costing?

- a. If more units were produced than were sold during a given year.
- b. If more units were sold than were produced during a given year.
- c. In all cases when ending finished goods inventory exists.
- d. None of these situations.

178. *CSO: 1C1f LOS: 1C1j*  
The primary purpose for allocating common costs to joint products is to determine
- the selling price of a by-product.
  - whether or not one of the joint products should be discontinued.
  - the variance between budgeted and actual common costs.
  - the inventory cost of joint products for financial reporting.
179. *CSO: 1C1f LOS: 1C1j*  
The distinction between joint products and by-products is largely dependent on
- historical costs.
  - prime costs.
  - market value.
  - salvage value.
180. *CSO: 1C1f LOS: 1C1j*  
In a production process where joint products are produced, the **primary** factor that will distinguish a joint product from a by-product is the
- relative total sales value of the products.
  - relative total volume of the products.
  - relative ease of selling the products.
  - accounting method used to allocate joint costs.
181. *CSO: 1C1f LOS: 1C1I*  
All of the following are methods of allocating joint costs to joint products **except**
- physical quantities method.
  - net realizable value method.
  - separable production cost method.
  - gross market value method.
182. *CSO: 1C1f LOS: 1C1I*  
Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. Big can be processed further into 600 gallons of Giant if \$1,000 of additional processing costs are incurred. Giant can be sold for \$17 per gallon. If the net-realizable-value method were used to allocate costs to the joint products, the total cost of producing Giant would be

- a. \$5,600.
- b. \$5,564.
- c. \$5,520.
- d. \$4,600.

183. *CSO: 1C1f LOS: 1C1I*

Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. If the sales value at splitoff method is used to allocate joint costs to the final products, the per gallon cost (rounded to the nearest cent) of producing Big is

- a. \$5.63 per gallon.
- b. \$5.00 per gallon.
- c. \$4.50 per gallon.
- d. \$3.38 per gallon.

184. *CSO: 1C1f LOS: 1C1I*

Tempo Company produces three products from a joint process. The three products are sold after further processing as there is no market for any of the products at the split-off point. Joint costs per batch are \$315,000. Other product information is shown below.

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>
Units produced per batch	20,000	30,000	50,000
Further processing and marketing cost per unit	\$ .70	\$3.00	\$1.72
Final sales value per unit	5.00	6.00	7.00

If Tempo uses the net realizable value method of allocating joint costs, how much of the joint costs will be allocated to each unit of Product C?

- a. \$2.10.
- b. \$2.65.
- c. \$3.15.
- d. \$3.78.

185. *CSO: 1C1f LOS: 1C1I*

Fitzpatrick Corporation uses a joint manufacturing process in the production of two products, Gummo and Xylo. Each batch in the joint manufacturing process yields 5,000 pounds of an intermediate material, Valdene, at a cost of \$20,000. Each batch of Gummo uses 60% of the Valdene and incurs \$10,000 of separate costs. The resulting 3,000 pounds of Gummo sells for \$10 per pound. The remaining Valdene is used in the production of Xylo which incurs \$12,000 of separable costs per batch. Each batch of

Xylo yields 2,000 pounds and sells for \$12 per pound. Fitzpatrick uses the net realizable value method to allocate the joint material costs. The company is debating whether or not to process Xylo further into a new product, Zinten, which would incur an additional \$4,000 in costs and sell for \$15 per pound. If Zinten is produced, income would increase by

- a. \$2,000.
- b. \$5,760.
- c. \$14,000.
- d. \$26,000.

186. CSO: 1C2a LOS: 1C2c

Darden Manufacturing, a calendar-year corporation, had \$17,000 of spoilage during April that production management characterized as abnormal. The spoilage was incurred on Job No. 532, that was sold three months later for \$459,000. Which of the following correctly describes the impact of the spoilage on Darden's unit manufacturing cost for Job No. 532 and on the year's operating income?

- |    | <u>Unit Manufacturing Cost</u> | <u>Operating Income</u>          |
|----|--------------------------------|----------------------------------|
| a. | Increase.                      | No effect.                       |
| b. | Increase.                      | Decrease.                        |
| c. | No effect.                     | Decrease.                        |
| d. | No effect.                     | Not enough information to judge. |

187. CSO: 1C2a LOS: 1C2b

Baldwin Printing Company uses a job order costing system and applies overhead based on machine hours. A total of 150,000 machine hours have been budgeted for the year. During the year, an order for 1,000 units was completed and incurred the following.

Direct material costs	\$1,000
Direct labor costs	1,500
Actual overhead	1,980
Machine hours	450

The accountant calculated the inventory cost of this order to be \$4.30 per unit. The annual budgeted overhead in dollars was

- a. \$577,500.
- b. \$600,000.
- c. \$645,000.
- d. \$660,000.

188. CSO: 1C2a LOS: 1C2b

John Sheng, cost accountant at Starlet Company, is developing departmental factory overhead application rates for the company's tooling and fabricating departments. The budgeted overhead for each department and the data for one job are shown below.



	<u>Departments</u>	
	<u>Tooling</u>	<u>Fabricating</u>
Supplies	\$ 850	\$ 200
Supervisors' salaries	1,500	2,000
Indirect labor	1,200	4,880
Depreciation	1,000	5,500
Repairs	<u>4,075</u>	<u>3,540</u>
Total budgeted overhead	<u>\$8,625</u>	<u>\$16,120</u>
Total direct labor hours	460	620
Direct labor hours on Job #231	12	3

Using the departmental overhead application rates, total overhead applied to Job #231 in the Tooling and Fabricating Departments will be

- a. \$225.
- b. \$303.
- c. \$537.
- d. \$671.

189. CSO: 1C2b LOS: 1C2b

Mack Inc. uses a weighted-average process costing system. Direct materials and conversion costs are incurred evenly during the production process. During the month of October, the following costs were incurred.

Direct materials	\$39,700
Conversion costs	70,000

The work-in-process inventory as of October 1 consisted of 5,000 units, valued at \$4,300, that were 20% complete. During October, 27,000 units were transferred out. Inventory as of October 31 consisted of 3,000 units that were 50% complete. The weighted-average inventory cost per unit completed in October was

- a. \$3.51.
- b. \$3.88.
- c. \$3.99.
- d. \$4.00.

190. CSO: 1C2b LOS: 1C2b

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

Production Flow	Physical Units
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method. The total raw material costs in the ending work-in-process inventory for December is

- \$120.
- \$72.
- \$60.
- \$36.

191. CSO: 1C2b LOS: 1C2c

A company that uses a process costing system inspects its goods at the 60% stage of completion. If the firm's ending work-in-process inventory is 80% complete, how would the firm account for its normal and abnormal spoilage?

- Both normal and abnormal spoilage costs would be added to the cost of the good units completed during the period.
- Both normal and abnormal spoilage costs would be written off as an expense of the period.
- Normal spoilage costs would be added to the cost of the good units completed during the period; in contrast, abnormal spoilage costs would be written off as a loss.
- Normal spoilage costs would be allocated between the cost of good units completed during the period and the ending work-in-process inventory. In contrast, abnormal spoilage costs would be written off as a loss.

192. CSO: 1C2b LOS: 1C2c

When considering normal and abnormal spoilage, which one of the following is theoretically the **best** accounting method for spoilage in a process-costing system?

- a. Both normal and abnormal spoilage cost should be charged to a separate expense account.
- b. Normal spoilage cost should be charged to good units and abnormal spoilage cost should be charged to a separate expense account.
- c. Both normal and abnormal spoilage costs should be charged to good units.
- d. Normal spoilage costs should be charged to a separate expense account and abnormal spoilage cost should be charged to good units.

193. CSO: 1C2b LOS: 1C2b

Southwood Industries uses a process costing system and inspects its goods at the end of manufacturing. The inspection as of June 30 revealed the following information for the month of June.

Good units completed	16,000
Normal spoilage (units)	300
Abnormal spoilage (units)	100

Unit costs were: materials, \$3.50; and conversion costs, \$6.00. The number of units that Southwood would transfer to its finished goods inventory and the related cost of these units are

	<u>Units Transferred</u>	<u>Cost</u>
a.	16,000	\$152,000.
b.	16,000	\$154,850.
c.	16,000	\$155,800.
d.	16,300	\$154,850.

194. CSO: 1C2b LOS: 1C2f

Colt Company uses a weighted-average process cost system to account for the cost of producing a chemical compound. As part of production, Material B is added when the goods are 80% complete. Beginning work-in-process inventory for the current month was 20,000 units, 90% complete. During the month, 70,000 units were started in process, and 65,000 of these units were completed. There were no lost or spoiled units. If the ending inventory was 60% complete, the total equivalent units for Material B for the month was

- a. 65,000 units.
- b. 70,000 units.
- c. 85,000 units.
- d. 90,000 units.

195. CSO: 1C2b LOS: 1C2b

Oster Manufacturing uses a weighted-average process costing system and has the following costs and activity during October.

Materials	\$40,000
Conversion cost	<u>32,500</u>
Total beginning work-in-process inventory	<u>\$72,500</u>

Materials	\$ 700,000
Conversion cost	<u>617,500</u>
Total production costs - October	<u>\$1,317,500</u>

Production completed	60,000 units
Work-in-process, October 31	20,000 units

All materials are introduced at the start of the manufacturing process, and conversion cost is incurred uniformly throughout production. Conversations with plant personnel reveal that, on average, month-end in-process inventory is 25% complete. Assuming no spoilage, how should Oster's October manufacturing cost be assigned?

	<u>Production Completed</u>	<u>Work-in-Process</u>
a.	\$1,042,500	\$347,500.
b.	\$1,095,000	\$222,500.
c.	\$1,155,000	\$235,000.
d.	\$1,283,077	\$106,923.

196. CSO: 1C2b LOS: 1C2f

San Jose Inc. uses a weighted-average process costing system. All materials are introduced at the start of manufacturing, and conversion cost is incurred evenly throughout production. The company started 70,000 units during May and had the following work-in-process inventories at the beginning and end of the month.

May 1	30,000 units, 40% complete
May 31	24,000 units, 25% complete

Assuming no spoilage or defective units, the total equivalent units used to assign costs for May are

	<u>Materials</u>	<u>Conversion Cost</u>
a.	70,000	70,000.
b.	82,000	82,000.
c.	100,000	70,000.
d.	100,000	82,000.

197. CSO: 1C2b LOS: 1C2b

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

<u>Production Flow</u>	<u>Physical Units</u>
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method. The total conversion cost assigned to units transferred to the next department in December was

- a. \$1,664.
- b. \$1,600.
- c. \$1,513.
- d. \$1,484.

198. CSO: 1C2b LOS: 1C2f

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

<u>Production Flow</u>	<u>Physical Units</u>
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during

December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the first-in, first-out (FIFO) process-costing method. The equivalent units of production used to calculate conversion costs for December was

- a. 110 units.
- b. 104 units.
- c. 100 units.
- d. 92 units.

199. *CSO: 1C2b LOS: 1C2f*

Jones Corporation uses a first-in, first-out (FIFO) process costing system. Jones has the following unit information for the month of August.

	<u>Units</u>
Beginning work-in-process inventory, 100% complete for materials, 75% complete for conversion cost	10,000
Units completed and transferred out	90,000
Ending work-in-process inventory, 100% complete for materials, 60% complete for conversion costs	8,000

The number of equivalent units of production for conversion costs for the month of August is

- a. 87,300.
- b. 88,000.
- c. 92,300.
- d. 92,700.

200. *CSO: 1C2b LOS: 1C2f*

Waller Co. uses a weighted-average process-costing system. Material B is added at two different points in the production of shirms, 40% is added when the units are 20% completed, and the remaining 60% of Material B is added when the units are 80% completed. At the end of the quarter, there are 22,000 shirms in process, all of which are 50% completed. With respect to Material B, the ending shirms in process represent how many equivalent units?

- a. 4,400 units.
- b. 8,800 units.
- c. 11,000 units.
- d. 22,000 units.

201. CSO: 1C2c LOS: 1C2a  
When using activity-based costing techniques, which one of the following departmental activities would be expected to use machine hours as a cost driver to allocate overhead costs to production?
- Plant cafeteria.
  - Machine setups.
  - Material handling.
  - Robotics painting.
202. CSO: 1C2c LOS: 1C2a  
A company is considering the implementation of an activity-based costing and management program. The company
- should focus on manufacturing activities and avoid implementation with service-type functions.
  - would probably find a lack of software in the marketplace to assist with the related recordkeeping.
  - would normally gain added insights into causes of cost.
  - would likely use fewer cost pools than it did under more traditional accounting methods.
203. CSO: 1C2c LOS: 1C2a  
All of the following are likely to be used as a cost allocation base in activity-based costing **except** the
- number of different materials used to manufacture the product.
  - units of materials used to manufacture the product.
  - number of vendors supplying the materials used to manufacture the product.
  - cost of materials used to manufacture the product.
204. CSO: 1C2c LOS: 1C2h  
Pelder Products Company manufactures two types of engineering diagnostic equipment used in construction. The two products are based upon different technologies, x-ray and ultra-sound, but are manufactured in the same factory. Pelder has computed the manufacturing cost of the x-ray and ultra-sound products by adding together direct materials, direct labor, and overhead cost applied based on the number of direct labor hours. The factory has three overhead departments that support the single production line that makes both products. Budgeted overhead spending for the departments is as follows.

Department			
<u>Engineering design</u>	<u>Material handling</u>	<u>Setup</u>	<u>Total</u>
\$6,000	\$5,000	\$3,000	<u>\$14,000</u>

Pelder's budgeted manufacturing activities and costs for the period are as follows.

<u>Activity</u>	<u>Product</u>	
	<u>X-Ray</u>	<u>Ultra-Sound</u>
Units produced and sold	50	100
Direct materials used	\$5,000	\$8,000
Direct labor hours used	100	300
Direct labor cost	\$4,000	\$12,000
Number of parts used	400	600
Number of engineering changes	2	1
Number of product setups	8	7

The budgeted cost to manufacture one ultra-sound machine using the activity-based costing method is

- a. \$225.
- b. \$264.
- c. \$293.
- d. \$305.

205. *CSO: 1C2c LOS: 1C2h*

The Chocolate Baker specializes in chocolate baked goods. The firm has long assessed the profitability of a product line by comparing revenues to the cost of goods sold. However, Barry White, the firm's new accountant, wants to use an activity-based costing system that takes into consideration the cost of the delivery person. Listed below are activity and cost information relating to two of Chocolate Baker's major products.

	<u>Muffins</u>	<u>Cheesecake</u>
Revenue	\$53,000	\$46,000
Cost of goods sold	26,000	21,000
<u>Delivery Activity</u>		
Number of deliveries	150	85
Average length of delivery	10 Minutes	15 Minutes
Cost per hour for delivery	\$20.00	\$20.00

Using activity-based costing, which one of the following statements is **correct**?

- a. The muffins are \$2,000 more profitable.
- b. The cheesecakes are \$75 more profitable.
- c. The muffins are \$1,925 more profitable.
- d. The muffins have a higher profitability as a percentage of sales and, therefore, are more advantageous.



206. CSO: 1C2c LOS: 1C2h

Atmel Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$ 450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead costs	<u>\$ 975,000</u>

Using activity-based costing, the per unit overhead cost allocation of receiving costs for product A is

- a. \$3.75.
- b. \$10.75.
- c. \$19.50.
- d. \$28.13.

207. CSO: 1C2c LOS: 1C2h

A profitable company with five departments uses plantwide overhead rates for its highly diversified operation. The firm is studying a change to either allocating overhead by using departmental rates or using activity-based costing (ABC). Which one of these two methods will likely result in the use of a greater number of cost allocation bases and more accurate costing results?

	<u>Greater Number of Allocation Bases</u>	<u>More Accurate Costing Results</u>
a.	Departmental	Departmental.
b.	Departmental	ABC.
c.	ABC	Departmental.
d.	ABC	ABC.

208. *CSO: 1C3a LOS: 1C3e*  
In practice, items such as wood screws and glue used in the production of school desks and chairs would **most** likely be classified as
- direct labor.
  - factory overhead.
  - direct materials.
  - period costs.
209. *CSO: 1C3b LOS: 1C23c*  
Young Company is beginning operations, and is considering three alternative ways in which to allocate manufacturing overhead to individual units produced. Young can use a plantwide rate, departmental rates, or activity based costing. Young will produce many types of products in its single plant, and not all products will be processed through all departments. In which one of the following independent situations would reported net income for the first year be the same regardless of which overhead allocation method had been selected?
- All production costs approach those costs that were budgeted.
  - The sales mix does not vary from the mix that was budgeted.
  - All manufacturing overhead is a fixed cost.
  - All ending inventory balances are zero.
210. *CSO: 1C3b LOS: 1C3d*  
The **most** important criterion in accurate cost allocations is
- using a simple allocation method.
  - allocating fixed and variable costs by using the same allocation base.
  - using homogeneous cost pools.
  - using multiple drivers for each cost pool.

211. *CSO: 1C3b LOS: 1C3g*  
Cynthia Rogers, the cost accountant for Sanford Manufacturing, is preparing a management report which must include an allocation of overhead. The budgeted overhead for each department and the data for one job are shown below.

	<u>Department</u>	
	<u>Tooling</u>	<u>Fabricating</u>
Supplies	\$ 690	\$ 80
Supervisor's salaries	1,400	1,800
Indirect labor	1,000	4,000
Depreciation	1,200	5,200
Repairs	<u>4,400</u>	<u>3,000</u>
Total budgeted overhead	<u>\$8,690</u>	<u>\$14,080</u>
Total direct labor hours	440	640
Direct labor hours on Job #231	10	2

Using the departmental overhead application rates, and allocating overhead on the basis of direct labor hours, overhead applied to Job #231 in the Tooling Department would be

- a. \$44.00
- b. \$197.50
- c. \$241.50
- d. \$501.00.

212. CSO: 1C3b LOS: 1C3g

Patterson Corporation expects to incur \$70,000 of factory overhead and \$60,000 of general and administrative costs next year. Direct labor costs at \$5 per hour are expected to total \$50,000. If factory overhead is to be applied per direct labor hour, how much overhead will be applied to a job incurring 20 hours of direct labor?

- a. \$28.
- b. \$120.
- c. \$140.
- d. \$260.

213. CSO: 1C3c LOS: 1C3f

Henry Manufacturing, which uses direct labor hours to apply overhead to its product line, undertook an extensive renovation and modernization program two years ago. Manufacturing processes were reengineered, considerable automated equipment was acquired, and 60% of the company's nonunion factory workers were terminated. Which of the following statements would apply to the situation at Henry?

- I. The company's factory overhead rate has likely increased.
  - II. The use of direct labor hours seems to be appropriate.
  - III. Henry will lack the ability to properly determine labor variances.
  - IV. Henry has likely reduced its ability to quickly cut costs in order to respond to economic downturns.
- a. I, II, III, and IV.
  - b. I and IV only.
  - c. II and IV only.
  - d. I and III only.

214. CSO: 1C3c LOS: 1C3h

Jones Tax Company has three divisions - Compliance, Tax Planning, and Financial Consulting. Based on the divisional data presented below, which one of the allocation bases for common company expenses would likely have the **least** negative behavioral impact on the Financial Consulting Division manager?

	<u>Compliance</u>	<u>Tax Planning</u>	<u>Financial Consulting</u>
Revenues	\$4,500,000	\$6,000,000	\$4,500,000
Variable expenses	1,500,000	3,750,000	2,250,000
No. of employees	68	76	56

- Revenues.
- Contribution margin.
- Equal sharing.
- Number of employees.

215. CSO: 1C3c LOS: 1C3g

Atmel Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead	<u>\$975,000</u>

The cost driver for engineering costs is the number of production orders per product line. Using activity-based costing, the engineering cost per unit for Product B would be

- \$4.00.
- \$10.00.
- \$15.00.
- \$29.25.

216. CSO: 1C3d LOS: 1C3p

When allocating costs from one department to another, a dual-rate cost-allocation method may be used. The dual-rate cost-allocation method is **most** useful when

- two or more cost pools are to be allocated.
- two or more departments' costs are to be allocated.
- two or more products are produced.
- costs are separated into variable-cost and fixed-cost subpools.

217. *CSO: 1C3d LOS: 1C3p*  
The management of ROX Company wishes to encourage all other departments to use the legal department, as circumstances warrant. To accomplish this, legal department costs should be
- allocated to users on the basis of the actual cost of hours used.
  - allocated to users on the basis of the budgeted cost of actual hours used.
  - allocated to users on the basis of standard cost for the type of service provided.
  - absorbed as a corporate expense.
218. *CSO: 1C3d LOS: 1C3o*  
Boston Furniture Company manufactures several steel products. It has three production departments, Fabricating, Assembly, and Finishing. The service departments include Maintenance, Material Handling, and Designing. Currently, the company does not allocate service department costs to the production departments. John Baker, who has recently joined the company as the new cost accountant, believes that service department rates should be developed and charged to the production departments for services requested. If the company adopts this new policy, the production department managers would be **least** likely to
- request an excessive amount of service.
  - replace outdated and inefficient systems.
  - refrain from using necessary services.
  - be encouraged to control costs.
219. *CSO: 1C3d LOS: 1C3p*  
Cotton Company has two service departments and three operating departments. In allocating service department costs to the operating departments, which of the following three methods (direct, step-down, reciprocal) will result in the same amount of service department costs being allocated to each operating department, regardless of the order in which the service department costs are allocated?
- Direct and reciprocal methods only.
  - Step-down and reciprocal methods only.
  - Direct and step-down methods only.
  - Direct method only.
220. *CSO: 1C3d LOS: 1C3p*  
Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the

Information Systems Department. Which one of the following departmental allocations is present in the reciprocal method of departmental allocation? The costs of the

- a. Assembly Department are allocated to the Information Systems Department and the Personnel Department.
- b. Information Systems Department are allocated to the Machining Department and the costs of the Machining Department are allocated to the Assembly Department.
- c. Personnel Department are allocated solely to the Information Systems Department.
- d. Information Systems Department are allocated to the Personnel Department, Machining Department, and Assembly Department.

221. *CSO: 1C3d LOS: 1C3p*

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the Information Systems Department. If Wilcox uses the step-down method of departmental allocation, which one of the following cost allocations would **not** occur? Some of the costs of the

- a. Personnel Department would be allocated to the Information Systems Department.
- b. Information Systems Department would be allocated to the Personnel Department.
- c. Personnel Department would be allocated to the Assembly Department.
- d. Personnel Department would be allocated to the Assembly Department and the Machining Department.

222. *CSO: 1C3d LOS: 1C3p*

Render Inc. has four support departments (maintenance, power, human resources, and legal) and three operating departments. The support departments provide services to the operating departments as well as to the other support departments. The method of allocating the costs of the support departments that **best** recognizes the mutual services rendered by support departments to other support departments is the

- a. direct allocation method.
- b. dual-rate allocation method.
- c. step-down allocation method.
- d. reciprocal allocation method.

223. CSO: 1C3d LOS: 1C3p

Logo Inc. has two data services departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows.

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
		<u>9,300</u>	<u>11,600</u>

If Logo employs the direct method of allocating service department costs, the overhead of the Systems Department would be allocated by dividing the overhead amount by

- 1,200 hours.
- 8,100 hours.
- 9,000 hours.
- 9,300 hours.

224. CSO: 1C3d LOS: 1C3p

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year.

	<u>Support Departments</u>		<u>Operating Departments</u>		<u>Total</u>
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work furnished					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

If Adam uses the step-down method, beginning with the Maintenance Department, to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- \$415,526.
- \$422,750.
- \$442,053.
- \$445,000.

225. CSO: 1C3d LOS: 1C3p

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than does the Information Systems Department. If Wilcox uses the direct method of departmental allocation, which one of the following cost allocations would occur? Some of the costs of the

- a. Personnel Department would be allocated to the Information Systems Department.
- b. Machining Department would be allocated to the Information Systems Department.
- c. Information Systems Department would be allocated to the Assembly Department.
- d. Assembly Department would be allocated to the Machining Department.

226. CSO: 1C3d LOS: 1C3p

Logo Inc. has two data services departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows.

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
		<u>9,300</u>	<u>11,600</u>

Logo employs the step-down method of allocating service department costs and begins with the Systems Department. Which one of the following correctly denotes the amount of the Systems Department's overhead that would be allocated to the Facilities Department and the Facilities Department's overhead charges that would be allocated to the Machining Department?

- |    | <u>Systems to Facilities</u> | <u>Facilities to Machining</u> |
|----|------------------------------|--------------------------------|
| a. | \$0                          | \$20,000.                      |
| b. | \$19,355                     | \$20,578.                      |
| c. | \$20,000                     | \$20,000.                      |
| d. | \$20,000                     | \$24,000.                      |



227. CSO: 1C3d LOS: 1C3p

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year.

	<u>Support Departments</u>		<u>Operating Departments</u>		
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work furnished					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

If Adam uses the direct method to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- \$418,000.
- \$422,750.
- \$442,053.
- \$445,000.

228. CSO: 1C4a LOS: 1C4b

Presario Inc. recently installed just-in-time production and purchasing systems. If Presario's experience is similar to that of other companies, Presario will likely

- reduce the number of suppliers with which it does business.
- increase the size of individual orders of raw materials.
- increase the dollar investment in finished goods inventory.
- be less reliant on sales orders as a "trigger" mechanism for production runs.

229. CSO: 1C4c LOS: 1C4i

According to the theory of constraints, all of the following activities help to relieve the problem of a bottleneck in operations **except**

- eliminating idle time at the bottleneck operation.
- reducing setup time at the bottleneck operation.
- shifting products that do not have to be made on bottleneck machines to non-bottleneck machines.
- increasing the efficiency of operations at non-bottleneck machines.

230. CSO: 1C4c LOS: 1C4j

When demand for a product or products exceeds production capacity, which one of the following is the first step that managers should take?

- a. Spend money to eliminate the bottleneck.
- b. Focus their efforts on constraint identification.
- c. Change the throughput of operations.
- d. Apply activity-based management to solve the problem.

231. CSO: 1C5a LOS: 1C5c

A company desires to prepare two sets of financial statements. Conventional financial statements would be prepared along with a set that is totally consistent with value-chain analysis. How would customer service costs be treated in the two statements?

	<u>Conventional Financial Statements</u>	<u>Value-Chain Financial Statements</u>
a.	Inventoriable cost	Product cost.
b.	Inventoriable cost	Non-product cost.
c.	Noninventoriable cost	Product cost.
d.	Noninventoriable cost	Non-product cost.

232. CSO: 1C5a LOS: 1C5b

Which one of the following lists of functions is in proper value chain order?

- a. Research and development, marketing, and customer services.
- b. Production, marketing, and production design.
- c. Production design, distribution, and marketing.
- d. Research and development, customer service, and distribution.

233. CSO: 1C5b LOS: 1C5d

Consider the following manufacturing-related activities.

- I. Conducting the final assembly of wooden furniture.
- II. Moving completed production to the finished goods warehouse.
- III. Painting newly-manufactured automobiles.
- IV. Setting up a machine related to a new production run.
- V. Reworking defective goods to bring them up to quality standards.

The activities that would be classified as value-added activities are

- a. II, III, IV, and V only.
- b. I, IV, and V only.
- c. I, III, and V only.
- d. I and III only.

234. CSO: 1C5c LOS: 1C5e

From the perspective of the management accountant, which one of the following represents a **major** disadvantage of business process reengineering?

- a. The focus is, to a large extent, on short-term results.
- b. It often results in a decreased use of centralized data bases.
- c. Internal control mechanisms are often disassembled.
- d. It results in heavier maintenance for legacy systems.

235. CSO: 1C5d LOS: 1C5g

Retail Partners Inc., which operates eight discount store chains, is seeking to reduce the costs of its purchasing activities through reengineering and a heavier use of electronic data interchange (EDI). Which of the following benchmarking techniques would be appropriate in this situation?

- I. A comparison of the purchasing costs and practices of each of Retail Partners' store chains to identify their internal "best in class."
  - II. A comparison of the practices of Retail Partners to those of Discount City, another retailer, whose practices are often considered "best in class."
  - III. A comparison of the practices of Retail Partners to those of Capital Airways, an international airline, whose practices are often considered "best in class."
  - IV. An in-depth review of a retail trade association publication on successful electronic data interchange applications.
- a. II and IV only.
  - b. I and II only.
  - c. I and IV only.
  - d. I, II, III, and IV.

236. CSO: 1C5d LOS: 1C5g

All of the following are examples of benchmarking standards **except**

- a. the performance of the unit during the previous year.
- b. the best performance of the unit in comparable past periods.
- c. a comparison with a similar unit within the same company.
- d. the best performance of a competitor with a similar operation.

237. CSO: 1C5h LOS: 1C5m

Leese Inc. has the following quality financial data for its most recent fiscal year.

Rework costs	\$110,000
Warranty repair costs	280,000
Product line inspection	95,000
Design engineering	300,000
Supplier evaluation	240,000
Labor training	150,000
Product testing	65,000
Breakdown maintenance	70,000
Product scrap	195,000
Cost of returned goods	180,000
Customer support	35,000
Product liability claims	80,000

The total amount of prevention costs that should be reported in a Cost of Quality report for the year is

- a. \$390,000.
- b. \$450,000.
- c. \$690,000.
- d. \$755,000.

238. CSO: 1C5h LOS: 1C5l

When measuring the cost of quality, the cost of inspecting incoming raw materials is a(n)

- a. prevention cost.
- b. appraisal cost.
- c. internal failure cost.
- d. external failure cost.

239. CSO: 1C5h LOS: 1C5l

In measuring the cost of quality, which one of the following is considered an appraisal cost?

- a. Rework cost.
- b. Product testing cost.
- c. Warranty claims cost.
- d. Equipment maintenance cost.

240. CSO: 1C5h LOS: 1C5l

External failure costs include all of the following costs **except** those related to

- a. lost sales and lost customers.
- b. warranty obligations.
- c. product liability suits.
- d. product field testing.

241. CSO: 1C5h LOS: 1C5l

When evaluating the cost of quality in an organization, which one of the following would be considered an internal failure cost?

- a. The cost to rework defective units.
- b. The cost to inspect units produced.
- c. The warranty repair costs.
- d. Product testing.

#### **Section D: Internal Controls**

242. CSO: 1D1a LOS: 1D1b

When assessing a company's internal control structure policies and procedures, the primary consideration is whether they

- a. prevent management override.
- b. relate to the control environment.
- c. reflect management's philosophy and operating style.
- d. affect the financial statement assertions.

243. CSO: 1D1b LOS: 1D1e

The basic concepts implicit in internal accounting controls include the following.

- The cost of the system should not exceed benefits expected to be attained.
- The overall impact of the control procedure should not hinder operating efficiency.

Which one of the following recognizes these two factors?

- a. Limitations.
- b. Management responsibility.
- c. Methods of data processing.
- d. Reasonable assurance.

244. CSO: 1D1b LOS: 1D1h

Which one of the following functions performed in an organization is a violation of internal control?

- a. A mail clerk opening the mail compares the check received with the source document accompanying the payment, noting the amount paid, then forwards the checks daily (along with a listing of the cash receipts) to the Cashier for deposit.
- b. A mail clerk opening the mail compares the check received with the source document accompanying the payment, noting the amount paid, then forwards the source documents that accompany the payments (along with a listing of the cash receipts) to Accounts Receivable, on a daily basis, for posting to the subsidiary ledger.
- c. At the end of the week the Cashier prepares a deposit slip for all of the cash receipts received during the week.
- d. The General Ledger clerk compares the summary journal entry, received from the Cashier for cash receipts applicable to outstanding accounts, with the batch total for posting to the Subsidiary Ledger by the Accounts Receivable clerk.

245. CSO: 1D1b LOS: 1D1g

In order to properly segregate duties, which function within the computer department should be responsible for reprocessing the errors detected during the processing of data?

- a. Department manager.
- b. Systems analyst.
- c. Computer programmer.
- d. Data control group.

246. CSO: 1D1b LOS: 1D1g

Which one of the following methods, for the distribution of employees' paychecks, would provide the **best** internal control for the organization?

- a. Delivery of the paychecks to each department supervisor, who in turn would distribute paychecks directly to the employees in his/her department.
- b. Direct deposit in each employee's personal bank account.
- c. Distribution of paychecks directly to each employee by a representative of the Human Resource department.
- d. Distribution of paychecks directly to each employee by the payroll manager.

247. CSO: 1D1b LOS: 1D1e

Which one of the following would be **most** effective in deterring the commission of fraud?

- a. Policies of strong internal control, segregation of duties, and requiring employees to take vacations.
- b. Policies of strong internal control and punishments for unethical behavior.
- c. Employee training, segregation of duties, and punishment for unethical behavior.
- d. Hiring ethical employees, employee training, and segregation of duties.

248. CSO: 1D1e LOS: 1D1q

A public corporation that must meet the provisions of the Foreign Corrupt Practices Act of 1977 should have a compliance program that includes all of the following steps **except**

- a. an authorized and properly signed agreement that it will abide by the Act.
- b. documentation of the corporation's existing internal accounting control systems.
- c. a cost/benefit analysis of the controls and the risks that are being minimized.
- d. a system of quality checks to evaluate the internal accounting control system.

249. CSO: 1D1e LOS: 1D1q

The principal impetus for the enactment of the Foreign Corrupt Act by the U.S. Congress was to

- a. discourage unethical behavior by foreigners employed by U.S. firms.
- b. promote the mandates issued by the United Nations with regard to global trade between its member nations.
- c. prevent the bribery of foreign officials by U.S. firms seeking to do business overseas.
- d. require mandatory documentation of the evaluation of internal controls by the independent auditors.

250. CSO: 1D2a LOS: 1D2a

Which one of the following statements, regarding internal auditing responsibility and authority, is **incorrect**?

- a. Internal auditors are expected to comply with standards of professional conduct.
- b. The understandability of audit reports is the responsibility of internal auditors.
- c. Follow-up on actions noted in audit findings is not required of internal auditors.
- d. Internal auditors are responsible to service the organization.

251. *CSO: 1D2a LOS: 1D2b*  
Which one of the following accounting and management techniques is **least** likely to assist internal auditors in appraising the efficiency with which resources are being used by respective profit centers?
- a. Cost Variance Analysis.
  - b. Flexible Budgets.
  - c. Activity-based management.
  - d. Joint cost allocations.
252. *CSO: 1D2b LOS: 1D2e*  
If a corporation may be violating federal and state laws governing environmental concerns, which one of the following types of audit will **best** assist in ascertaining whether such situations may exist?
- a. Operational audit.
  - b. Compliance Audit.
  - c. Financial audit.
  - d. Management Audit.
253. *CSO: 1D2b LOS: 1D2e*  
Which one of the following types of audits would be **most** likely to focus on objectives related to the efficient use of resources?
- a. Compliance audit.
  - b. Information systems audit.
  - c. Independent audit.
  - d. Operational audit.
254. *CSO: 1D2b LOS: 1D2e*  
When an internal auditor expresses an opinion as to the efficiency and effectiveness of an entity's activities and makes recommendations for improvements, the auditor is conducting a(n)
- a. financial statement audit of a public company.
  - b. financial statement audit of a municipality.
  - c. compliance audit.
  - d. operational audit.



255. CSO: 1D3a LOS: 1D3b

A computer virus is different from a “Trojan Horse” because the virus can

- a. corrupt data.
- b. alter programming instructions.
- c. replicate itself.
- d. erase executable files.

256. CSO: 1D3a LOS: 1D3c

In situations where it is crucial that data be entered correctly into an accounting information system, the **best** method of data control would be to use

- a. key verification.
- b. compatibility tests.
- c. limit checks.
- d. reasonableness tests.

257. CSO: 1D3b LOS: 1D3f

Consider the following types of controls.

- I. Preventive
- II. Corrective
- III. Feedback
- IV. Feedforward
- V. Detective

Which one of the following groups of controls are generally considered the **most** cost-effective controls?

- a. I, II, and III.
- b. III, IV, and V.
- c. I, II, and IV.
- d. I, III, and V.

258. CSO: 1D3b LOS: 1D3c

The **most** appropriate control to verify that a user is authorized to execute a particular on-line transaction is a

- a. password.
- b. challenge/response system.
- c. compatibility check.
- d. closed-loop verification.

259. CSO: 1D3c LOS: 1D3d

In securing the client/server environment of an information system, a principal disadvantage of using a single level sign-on password is the danger of creating a(n)

- a. trap door entry point.
- b. single point of failure.
- c. administrative bottleneck.
- d. lock-out of valid users.

260. CSO: 1D3c LOS: 1D3e

Which one of the following represents a weakness in the internal control system of an electronic data processing system?

- a. The data control group reviews and tests procedures and handles the reprocessing of errors detected by the computer.
- b. The accounts receivable clerk prepares and enters data into the computer system and reviews the output for errors.
- c. The systems analyst designs new systems and supervises testing of the system.
- d. The computer operator executes programs according to operating instructions and maintains custody of programs and data files.

261. CSO: 1D3c LOS: 1D3i

Confidential data can be securely transmitted over the internet by using

- a. single-use passwords.
- b. firewalls.
- c. encryption.
- d. digital signatures.

262. CSO: 1D3c LOS: 1D3i

All of the following are examples of encryption techniques used for computer security **except**

- a. public key.
- b. private key.
- c. primary key.
- d. authentication key.

263. CSO: 1D3d LOS: 1D3k

The data entry staff of National Manufacturing Inc. has responsibility for converting all of the plant's shipping information to computerized records. The information flow begins when the shipping department sends a copy of a shipping order to the data entry

staff. A data entry operator scans the shipping order information onto a hand-held data storage device. Verification clerks then check the computerized record with the original shipping orders. When a given batch of files has been reviewed and corrected, as necessary, the information is uploaded to the company's mainframe system at the home office.

The **most** effective way to visualize and understand this set of activities would be through the use of a

- a. program flowchart.
- b. decision table.
- c. document flowchart.
- d. Gantt chart.

264. CSO: 1D3f LOS: 1D3m

When attempting to restore computing facilities at an alternate site following a disaster, which one of the following should be restored first?

- a. Online system.
- b. Batch system.
- c. Operating system.
- d. Decision support system.

## Section E: Professional Ethics

265. CSO: 1E1a LOS: 1E1c

Recently Fan Club Inc. submitted a budget for the coming year to management. Included in the budget were the plans for a new product, a rechargeable fan. The new fan will not only last longer than the competitor's product but is also more quiet. While not yet approved, the budget called for aggressive advertising to support its sales targets, as the business community was not yet aware that Fan Club was close to production of a new fan. A member of the management accounting staff "shared" the budget with a distributor. In accordance with IMA's "Statement of Ethical Professional Practice," which one of the following would **best** represent an ethical conflict in this situation?

- a. The budget has not been approved and therefore is not for publication.
- b. The price has not been established, so expectations must be managed.
- c. The staff member exposed the company to a potential lawsuit.
- d. The employee should refrain from disclosing confidential information.

### Answers – CMA Part 1 Practice Questions

1.	B	44.	A	87.	B	130.	D
2.	D	45.	D	88.	A	131.	C
3.	D	46.	D	89.	D	132.	D
4.	D	47.	A	90.	C	133.	B
5.	C	48.	B	91.	C	134.	B
6.	D	49.	C	92.	D	135.	D
7.	D	50.	C	93.	C	136.	C
8.	D	51.	B	94.	B	137.	D
9.	D	52.	D	95.	D	138.	B
10.	D	53.	A	96.	A	139.	B
11.	D	54.	C	97.	C	140.	B
12.	B	55.	C	98.	C	141.	D
13.	C	56.	B	99.	B	142.	D
14.	C	57.	D	100.	B	143.	D
15.	D	58.	D	101.	C	144.	A
16.	D	59.	A	102.	D	145.	D
17.	C	60.	A	103.	B	146.	B
18.	B	61.	C	104.	C	147.	B
19.	A	62.	D	105.	D	148.	A
20.	D	63.	C	106.	B	149.	B
21.	D	64.	D	107.	A	150.	D
22.	B	65.	B	108.	B	151.	B
23.	B	66.	D	109.	C	152.	B
24.	C	67.	A	110.	D	153.	A
25.	B	68.	B	111.	B	154.	A
26.	A	69.	A	112.	B	155.	B
27.	A	70.	C	113.	D	156.	C
28.	A	71.	A	114.	D	157.	B
29.	B	72.	C	115.	D	158.	C
30.	A	73.	C	116.	D	159.	C
31.	B	74.	B	117.	D	160.	C
32.	D	75.	A	118.	B	161.	D
33.	C	76.	A	119.	B	162.	B
34.	D	77.	B	120.	D	163.	D
35.	C	78.	C	121.	B	164.	A
36.	B	79.	B	122.	B	165.	B
37.	A	80.	C	123.	C	166.	C
38.	C	81.	C	124.	C	167.	B
39.	B	82.	C	125.	D	168.	A
40.	C	83.	B	126.	C	169.	A
41.	D	84.	C	127.	C	170.	C
42.	C	85.	B	128.	A	171.	A
43.	C	86.	B	129.	D	172.	D

173. A  
174. C  
175. D  
176. A  
177. D  
178. D  
179. C  
180. A  
181. C  
182. A  
183. A  
184. D  
185. A  
186. C  
187. B  
188. B  
189. D  
190. C  
191. D  
192. B  
193. B  
194. A  
195. C  
196. D

197. B  
198. D  
199. A  
200. B  
201. D  
202. C  
203. D  
204. B  
205. C  
206. A  
207. D  
208. B  
209. D  
210. C  
211. B  
212. C  
213. B  
214. D  
215. C  
216. D  
217. D  
218. A  
219. A  
220. D

221. B  
222. D  
223. B  
224. C  
225. C  
226. D  
227. D  
228. A  
229. D  
230. B  
231. C  
232. A  
233. D  
234. C  
235. D  
236. A  
237. C  
238. B  
239. B  
240. D  
241. A  
242. D  
243. D  
244. C

245. D  
246. B  
247. A  
248. A  
249. C  
250. C  
251. D  
252. B  
253. D  
254. D  
255. C  
256. A  
257. C  
258. C  
259. B  
260. D  
261. C  
262. C  
263. C  
264. C  
265. D



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# CMA Exam Support Package

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**Institute of Certified Management Accountants**

**Content Specification Outlines  
Certified Management Accountant (CMA) Examinations**

The content specification outlines presented below represent the body of knowledge that will be covered on the CMA examinations. The outlines may be changed in the future when new subject matter becomes part of the common body of knowledge.

Candidates for the CMA designation are required to take and pass Parts 1 and 2.

Candidates are responsible for being informed on the most recent developments in the areas covered in the outlines. This includes understanding of public pronouncements issued by accounting organizations as well as being up-to-date on recent developments reported in current accounting, financial and business periodicals.

The content specification outlines serve several purposes. The outlines are intended to:

- Establish the foundation from which each examination will be developed.
- Provide a basis for consistent coverage on each examination.
- Communicate to interested parties more detail as to the content of each examination part.
- Assist candidates in their preparation for each examination.
- Provide information to those who offer courses designed to aid candidates in preparing for the examinations.



Important additional information about the content specification outlines and the examinations is listed below.

1. The coverage percentage given for each major topic within each examination part represents the relative weight given to that topic in an examination part. The number of questions presented in each major topic area approximates this percentage.
2. Each examination will sample from the subject areas contained within each major topic area to meet the relative weight specifications. No relative weights have been assigned to the subject areas within each major topic. No inference should be made from the order in which the subject areas are listed or from the number of subject areas as to the relative weight or importance of any of the subjects.
3. Each major topic within each examination part has been assigned a coverage level designating the depth and breadth of topic coverage, ranging from an introductory knowledge of a subject area (Level A) to a thorough understanding of and ability to apply the essentials of a subject area (Level C). Detailed explanations of the coverage levels and the skills expected of candidates are presented below.
4. The topics for Parts 1 and 2 have been selected to minimize the overlapping of subject areas among the examination parts. The topics within an examination part and the subject areas within topics may be combined in individual questions.
5. With regard to U.S. Federal income taxation issues, candidates will be expected to understand the impact of income taxes when reporting and analyzing financial results. In addition, the tax code provisions that impact decisions (e.g., depreciation, interest, etc.) will be tested.
6. Candidates for the CMA designation are assumed to have knowledge of the following: preparation of financial statements, business economics, time-value of money concepts, statistics and probability.
7. Parts 1 and 2 are four-hour exams and each contains 100 multiple-choice questions and 2 essay questions. Candidates will have three hours to complete the multiple-choice questions and one hour to complete the essay section. A small number of the multiple-choice questions on each exam are being validated for future use and will not count in the final score.
8. For the essay questions, both written and quantitative responses will be required. Candidates will be expected to present written answers that are responsive to the question asked, presented in a logical manner, and demonstrate an appropriate understanding of the subject matter. It should be noted that candidates are expected to have working knowledge in the use of word processing and electronic spreadsheets.

In order to more clearly define the topical knowledge required by a candidate, varying levels of coverage for the treatment of major topics of the content specification outlines have been identified and defined. The cognitive skills that a successful candidate should possess and that should be tested on the examinations can be defined as follows:

***Knowledge:*** Ability to remember previously learned material such as specific facts, criteria, techniques, principles, and procedures (i.e., identify, define, list).

***Comprehension:*** Ability to grasp and interpret the meaning of material (i.e., classify, explain, distinguish between).

***Application:*** Ability to use learned material in new and concrete situations (i.e., demonstrate, predict, solve, modify, relate).

***Analysis:*** Ability to break down material into its component parts so that its organizational structure can be understood; ability to recognize causal relationships, discriminate between behaviors, and identify elements that are relevant to the validation of a judgment (i.e., differentiate, estimate, order).

***Synthesis:*** Ability to put parts together to form a new whole or proposed set of operations; ability to relate ideas and formulate hypotheses (i.e. combine, formulate, revise).

***Evaluation:*** Ability to judge the value of material for a given purpose on the basis of consistency, logical accuracy, and comparison to standards; ability to appraise judgments involved in the selection of a course of action (i.e., criticize, justify, conclude).

The three levels of coverage can be defined as follows:

***Level A:*** Requiring the skill levels of knowledge and comprehension.

***Level B:*** Requiring the skill levels of knowledge, comprehension, application, and analysis.

***Level C:*** Requiring all six skill levels, knowledge, comprehension, application, analysis, synthesis, and evaluation.

The levels of coverage as they apply to each of the major topics of the Content Specification Outlines are shown on the following pages with each topic listing. The levels represent the manner in which topic areas are to be treated and represent ceilings, i.e., a topic area designated as Level C may contain requirements at the “A,” “B,” or “C” level, but a topic designated as Level B will not contain requirements at the “C” level.

## **CMA Content Specification Overview**

### ***Part 1 Financial Reporting, Planning, Performance, and Control*** *(4 hours – 100 questions and 2 essay questions)*

<b>External Financial Reporting Decisions</b>	<b>15%</b>	<b>Level C</b>
<b>Planning, Budgeting and Forecasting</b>	<b>30%</b>	<b>Level C</b>
<b>Performance Management</b>	<b>20%</b>	<b>Level C</b>
<b>Cost Management</b>	<b>20%</b>	<b>Level C</b>
<b>Internal Controls</b>	<b>15%</b>	<b>Level C</b>

### ***Part 2 Financial Decision Making*** *(4 hours – 100 questions and 2 essay questions)*

<b>Financial Statement Analysis</b>	<b>25%</b>	<b>Level C</b>
<b>Corporate Finance</b>	<b>20%</b>	<b>Level C</b>
<b>Decision Analysis</b>	<b>20%</b>	<b>Level C</b>
<b>Risk Management</b>	<b>10%</b>	<b>Level C</b>
<b>Investment Decisions</b>	<b>15%</b>	<b>Level C</b>
<b>Professional Ethics</b>	<b>10%</b>	<b>Level C</b>

**Content Specification Outlines**  
**Certified Management Accountant (CMA) Examinations**

**Part 1 - Financial Reporting, Planning, Performance, and Control**

**A. External Financial Reporting Decisions (15% - Levels A, B, and C)**

**1. *Financial statements***

- a. Balance sheet
- b. Income statement
- c. Statement of changes in equity
- d. Statement of cash flows

**2. *Recognition, measurement, valuation, and disclosure***

- a. Asset valuation
- b. Valuation of liabilities
- c. Equity transactions
- d. Revenue recognition
- e. Income measurement
- f. Major differences between U.S. GAAP and IFRS

**B. Planning, Budgeting and Forecasting (30% - Levels A, B, and C)**

**1. *Strategic planning***

- a. Analysis of external and internal factors affecting strategy
- b. Long-term mission and goals
- c. Alignment of tactics with long-term strategic goals
- d. Strategic planning models and analytical techniques
- e. Characteristics of successful strategic planning process

**2. *Budgeting concepts***

- a. Operations and performance goals
- b. Characteristics of a successful budget process
- c. Resource allocation
- d. Other budgeting concepts

**3. *Forecasting techniques***

- a. Regression analysis
- b. Learning curve analysis
- c. Expected value

**4. *Budgeting methodologies***

- a. Annual business plans (master budgets)
- b. Project budgeting
- c. Activity-based budgeting
- d. Zero-based budgeting
- e. Continuous (rolling) budgets
- f. Flexible budgeting

**5. *Annual profit plan and supporting schedules***

- a. Operational budgets
- b. Financial budgets
- c. Capital budgets

**6. *Top-level planning and analysis***

- a. Pro forma income
- b. Financial statement projections
- c. Cash flow projections

**C. Performance Management (20% - Levels A, B, and C)**

**1. *Cost and variance measures***

- a. Comparison of actual to planned results
- b. Use of flexible budgets to analyze performance
- c. Management by exception
- d. Use of standard cost systems
- e. Analysis of variation from standard cost expectations

**2. *Responsibility centers and reporting segments***

- a. Types of responsibility centers
- b. Transfer pricing models
- c. Reporting of organizational segments

**3. *Performance measures***

- a. Product profitability analysis
- b. Business unit profitability analysis
- c. Customer profitability analysis
- d. Return on investment
- e. Residual income
- f. Investment base issues
- g. Key performance indicators (KPIs)
- h. Balanced scorecard

## **D. Cost Management (20% - Levels A, B, and C)**

### ***1. Measurement concepts***

- a. Cost behavior and cost objects
- b. Actual and normal costs
- c. Standard costs
- d. Absorption (full) costing
- e. Variable (direct) costing
- f. Joint and by-product costing

### ***2. Costing systems***

- a. Job order costing
- b. Process costing
- c. Activity-based costing
- d. Life-cycle costing

### ***3. Overhead costs***

- a. Fixed and variable overhead expenses
- b. Plant-wide versus departmental overhead
- c. Determination of allocation base
- d. Allocation of service department costs

### ***4. Supply Chain Management***

- a. Lean manufacturing
- b. Enterprise resource planning (ERP)
- c. Theory of constraints and throughput costing
- d. Capacity management and analysis

### ***5. Business process improvement***

- a. Value chain analysis
- b. Value-added concepts
- c. Process analysis
- d. Activity-based management
- e. Continuous improvement concepts
- f. Best practice analysis
- g. Cost of quality analysis
- h. Efficient accounting processes

## **E. Internal Controls (15% - Levels A, B, and C)**

### ***1. Governance, risk, and compliance***

- a. Internal control structure and management philosophy
- b. Internal control policies for safeguarding and assurance
- c. Internal control risk
- d. Corporate governance
- e. External audit requirements

**2. *Internal auditing***

- a. Responsibility and authority of the internal audit function
- b. Types of audits conducted by internal auditors

**3. *Systems controls and security measures***

- a. General accounting system controls
- b. Application and transaction controls
- c. Network controls
- d. Backup controls
- e. Business continuity planning

## **Part 2- Financial Decision Making**

### **A. Financial Statement Analysis (25% - Levels A, B, and C)**

#### ***1. Basic Financial Statement Analysis***

- a. Common size financial statements
- b. Common base year financial statements

#### ***2. Financial Ratios***

- a. Liquidity
- b. Leverage
- c. Activity
- d. Profitability
- e. Market

#### ***3. Profitability analysis***

- a. Income measurement analysis
- b. Revenue analysis
- c. Cost of sales analysis
- d. Expense analysis
- e. Variation analysis

#### ***4. Special issues***

- a. Impact of foreign operations
- b. Effects of changing prices and inflation
- c. Off-balance sheet financing
- d. Impact of changes in accounting treatment
- e. Accounting and economic concepts of value and income
- f. Earnings quality

### **B. Corporate Finance (20% - Levels A, B, and C)**

#### ***1. Risk and return***

- a. Calculating return
- b. Types of risk
- c. Relationship between risk and return

#### ***2. Long-term financial management***

- a. Term structure of interest rates
- b. Types of financial instruments
- c. Cost of capital
- d. Valuation of financial instruments



### **3. *Raising capital***

- a. Financial markets and regulation
- b. Market efficiency
- c. Financial institutions
- d. Initial and secondary public offerings
- e. Dividend policy and share repurchases
- f. Lease financing

### **4. *Working capital management***

- a. Working capital terminology
- b. Cash management
- c. Marketable securities management
- d. Accounts receivable management
- e. Inventory management
- f. Types of short-term credit
- g. Short-term credit management

### **5. *Corporate restructuring***

- a. Mergers and acquisitions
- b. Bankruptcy
- c. Other forms of restructuring

### **6. *International finance***

- a. Fixed, flexible, and floating exchange rates
- b. Managing transaction exposure
- c. Financing international trade
- d. Tax implications of transfer pricing

## **C. Decision Analysis (20% - Levels A, B, and C)**

### **1. *Cost/volume/profit analysis***

- a. Breakeven analysis
- b. Profit performance and alternative operating levels
- c. Analysis of multiple products

### **2. *Marginal analysis***

- a. Sunk costs, opportunity costs and other related concepts
- b. Marginal costs and marginal revenue
- c. Special orders and pricing
- d. Make versus buy
- e. Sell or process further
- f. Add or drop a segment
- g. Capacity considerations

### **3. Pricing**

- a. Pricing methodologies
- b. Target costing
- c. Elasticity of demand
- d. Product life cycle considerations
- e. Market structure considerations

## **D. Risk Management (10% - Levels A, B, and C)**

### **1. Enterprise risk**

- a. Types of risk
- b. Risk identification and assessment
- c. Risk mitigation strategies
- d. Managing risk

## **E. Investment Decisions (15% - Levels A, B, and C)**

### **1. Capital budgeting process**

- a. Stages of capital budgeting
- b. Incremental cash flows
- c. Income tax considerations

### **2. Discounted cash flow analysis**

- a. Net present value
- b. Internal rate of return
- c. Comparison of NPV and IRR

### **3. Payback and discounted payback**

- a. Uses of payback method
- b. Limitations of payback method
- c. Discounted payback

### **4. Risk analysis in capital investment**

- a. Sensitivity and scenario analysis
- b. Real options

## **F. Professional Ethics (10% - Levels A, B, and C)**

### ***1. Ethical considerations for management accounting and financial management professionals***

- a. IMA's "Statement of Ethical Professional Practice"
- b. Fraud triangle
- c. Evaluation and resolution of ethical issues

### ***2. Ethical considerations for the organization***

- a. IMA's Statement on Management Accounting, "Values and Ethics: From Inception to Practice"
- b. U.S. Foreign Corrupt Practices Act
- c. Corporate responsibility for ethical conduct

# Certified Management Accountant

## Learning Outcome Statements

### **PART 1 – Financial Reporting, Planning, Performance, and Control**

#### **Section A. External Financial Reporting Decisions (15% - Levels A, B, and C)**

##### **Part 1 – Section A.1. Financial statements**

For the balance sheet, income statement, statement of changes in equity, and the statement of cash flows, the candidate should be able to:

- a. identify the users of these financial statements and their needs
- b. demonstrate an understanding of the purposes and uses of each statement
- c. identify the major components and classifications of each statement
- d. identify the limitations of each financial statement
- e. identify how various financial transactions affect the elements of each of the financial statements and determine the proper classification of the transaction
- f. identify the basic disclosures related to each of the statements (footnotes, supplementary schedules, etc.)
- g. demonstrate an understanding of the relationship among the financial statements
- h. prepare a balance sheet, an income statement, a statement of changes in equity, and a statement of cash flows (indirect method)

##### **Part 1 – Section A.2. Recognition, measurement, valuation, and disclosure**

###### Asset valuation

- a. identify issues related to the valuation of accounts receivable, including timing of recognition and estimation of uncollectible accounts
- b. determine the financial statement effect of using the percentage-of-sales (income statement) approach as opposed to the percentage-of-receivables (balance sheet) approach in calculating the allowance for uncollectible accounts
- c. distinguish between receivables sold (factoring) on a with-recourse basis and those sold on a without-recourse basis, and determine the effect on the balance sheet
- d. identify issues in inventory valuation, including which goods to include, what costs to include, and which cost assumption to use
- e. identify and compare cost flow assumptions used in accounting for inventories
- f. demonstrate an understanding of the lower of cost or market rule for inventories
- g. calculate the effect on income and on assets of using different inventory methods
- h. analyze the effects of inventory errors
- i. identify advantages and disadvantages of the different inventory methods

- j. recommend the inventory method and cost flow assumption that should be used for a firm given a set of facts
- k. demonstrate an understanding of the following security types: trading, available-for-sale, and held-to-maturity
- l. demonstrate an understanding of the fair value method, equity method, and consolidated method for equity securities
- m. determine the effect on the financial statements of using different depreciation methods
- n. recommend a depreciation method for a given a set of data
- o. demonstrate an understanding of the accounting for impairment of long-term assets
- p. demonstrate an understanding of the accounting for impairment of intangible assets, including goodwill

#### Valuation of liabilities

- q. identify the classification issues of short-term debt expected to be refinanced
- r. compare the effect on financial statements when using either the expense warranty approach or the sales warranty approach for accounting for warranties
- s. define off-balance sheet financing and identify different forms of this type of borrowing

#### Income taxes (applies to Assets and Liabilities subtopics)

- t. demonstrate an understanding of interperiod tax allocation/deferred income taxes
- u. define and analyze temporary differences, operating loss carrybacks, and operating loss carryforwards
- v. distinguish between deferred tax liabilities and deferred tax assets
- w. differentiate between temporary differences and permanent differences and identify examples of each
- x. indicate the proper income statement and balance sheet presentation of income tax expense and deferred taxes
- y. explain the issues involved in determining the amount and classification of tax assets and liabilities

#### Leases (applies to Assets and Liabilities subtopics)

- z. distinguish between an operating lease and a capital lease
- aa. explain why an operating lease is a form of off-balance sheet financing
- bb. demonstrate an understanding of why lessees may prefer the accounting for a lease as an operating lease as opposed to a capital lease
- cc. recognize the correct financial statement presentation of operating and capital lease

#### Equity transactions

- dd. identify transactions that affect paid-in capital and those that affect retained earnings
- ee. determine the effect on shareholders' equity of large and small stock dividends, and stock splits
- ff. identify reasons for the appropriation of retained earnings

#### Revenue recognition

- gg. apply revenue recognition principles to various types of transactions

- hh. identify issues involved with revenue recognition at point of sale, including sales with buyback agreements, sales when right of return exists, and trade loading (or channel stuffing)
- ii. identify instances where revenue is recognized before delivery and when it is recognized after delivery
- jj. distinguish between percentage-of-completion and completed-contract methods for recognizing revenue
- kk. compare and contrast the recognition of costs of construction, progress billings, collections, and gross profit under the two long-term contract accounting methods
- ll. identify the situations in which each of the following revenue recognition methods would be used: installment sales method, cost recovery method, and deposit method
- mm. discuss the issues and concerns that have been identified with respect to revenue recognition practices
- nn. demonstrate an understanding of the matching principle with respect to revenues and expenses and be able to apply it to a specific situation

#### Income measurement

- oo. define gains and losses and indicate the proper financial statement presentation
- pp. demonstrate an understanding of the proper accounting for losses on long-term contracts
- qq. demonstrate an understanding of the treatment of gain or loss on the disposal of fixed assets
- rr. demonstrate an understanding of expense recognition practices
- ss. define and calculate comprehensive income
- tt. identify correct treatment of extraordinary items and discontinued operations

#### GAAP – IFRS differences

Major differences in reported financial results when using GAAP vs. IFRS and the impact on analysis

- uu. identify and describe the following differences between U.S. GAAP and IFRS: (i) revenue recognition, with respect to the sale of goods, services, deferred receipts and construction contracts; (ii) expense recognition, with respect to share-based payments and employee benefits; (iii) intangible assets, with respect to development costs and revaluation; (iv) inventories, with respect to costing methods, valuation and write-downs (e.g., LIFO); (v) leases, with respect to leases of land and buildings; (vi) long-lived assets, with respect to revaluation, depreciation, and capitalization of borrowing costs; (vii) impairment of assets, with respect to determination, calculation and reversal of loss; and (viii) financial statement presentation, with respect to extraordinary items and changes in equity

### **Section B. Planning, Budgeting and Forecasting (30% - Levels A, B, and C)**

#### **Part 1 – Section B.1. Strategic planning**

The candidate should be able to:

- a. discuss how strategic planning determines the path an organization chooses for attaining its long-term goals and mission
- b. identify the time frame appropriate for a strategic plan

- c. identify the external factors that should be analyzed during the strategic planning process and understand how this analysis leads to recognition of organizational opportunities, limitations, and threats
- d. identify the internal factors that should be analyzed during the strategic planning process and explain how this analysis leads to recognition of organizational strengths, weaknesses, and competitive advantages
- e. demonstrate an understanding of how mission leads to the formulation of long-term business objectives such as business diversification, the addition or deletion of product lines, or the penetration of new markets
- f. explain why short-term objectives, tactics for achieving these objectives, and operational planning (master budget) must be congruent with the strategic plan and contribute to the achievement of long-term strategic goals
- g. identify the characteristics of successful strategic plans
- h. describe Porter's generic strategies, including cost leadership, differentiation, and focus
- i. demonstrate an understanding of the following planning tools and techniques: SWOT analysis, Porter's 5 forces, situational analysis, PEST analysis, scenario planning, competitive analysis, contingency planning, and the BCG Growth-Share Matrix

## **Part 1 – Section B.2. Budgeting concepts**

The candidate should be able to:

- a. describe the role that budgeting plays in the overall planning and performance evaluation process of an organization
- b. explain the interrelationships between economic conditions, industry situation, and a firm's plans and budgets
- c. identify the role that budgeting plays in formulating short-term objectives and planning and controlling operations to meet those objectives
- d. demonstrate an understanding of the role that budgets play in measuring performance against established goals
- e. identify the characteristics that define successful budgeting processes
- f. explain how the budgeting process facilitates communication among organizational units and enhances coordination of organizational activities
- g. describe the concept of a controllable cost as it relates to both budgeting and performance evaluation
- h. explain how the efficient allocation of organizational resources are planned during the budgeting process
- i. identify the appropriate time frame for various types of budgets
- j. identify who should participate in the budgeting process for optimum success
- k. describe the role of top management in successful budgeting
- l. identify best practice guidelines for the budget process
- m. demonstrate an understanding of the use of cost standards in budgeting
- n. differentiate between ideal (theoretical) standards and currently attainable (practical) standards
- o. differentiate between authoritative standards and participative standards
- p. identify the steps to be taken in developing standards for both direct material and direct labor

- q. demonstrate an understanding of the techniques that are used to develop standards such as activity analysis and the use of historical data
- r. discuss the importance of a policy that allows budget revisions that accommodate the impact of significant changes in budget assumptions
- s. explain the role of budgets in monitoring and controlling expenditures to meet strategic objectives
- t. define budgetary slack and discuss its impact on goal congruence

### **Part 1 – Section B.3. Forecasting techniques**

The candidate should be able to:

- a. demonstrate an understanding of a simple regression equation
- b. define a multiple regression equation and recognize when multiple regression is an appropriate tool to use for forecasting
- c. calculate the result of a simple regression equation
- d. demonstrate an understanding of learning curve analysis
- e. calculate the results under a cumulative average-time learning model
- f. list the benefits and shortcomings of regression analysis and learning curve analysis
- g. calculate the expected value of random variables
- h. identify the benefits and shortcomings of expected value techniques
- i. use probability values to estimate future cash flows

### **Part 1 – Section B.4. Budget methodologies**

For each of the budget systems identified (annual/master budgets, project budgeting, activity-based budgeting, zero-based budgeting, continuous (rolling) budgets, and flexible budgeting), the candidate should be able to:

- a. define its purpose, appropriate use, and time frame
- b. identify the budget components and explain the interrelationships among the components
- c. demonstrate an understanding of how the budget is developed
- d. compare and contrast the benefits and limitations of the budget system
- e. evaluate a business situation and recommend the appropriate budget solution
- f. prepare budgets on the basis of information presented
- g. calculate the impact of incremental changes to budgets

### **Part 1 – Section B.5. Annual profit plan and supporting schedules**

The candidate should be able to:

- a. explain the role of the sales budget in the development of an annual profit plan
- b. identify the factors that should be considered when preparing a sales forecast
- c. identify the components of a sales budget and prepare a sales budget
- d. explain the relationship between the sales budget and the production budget
- e. identify the role that inventory levels play in the preparation of a production budget and define other factors that should be considered when preparing a production budget
- f. prepare a production budget



- g. demonstrate an understanding of the relationship between the direct materials budget, the direct labor budget, and the production budget
- h. explain how inventory levels and procurement policies affect the direct materials budget
- i. prepare direct materials and direct labor budgets based on relevant information and evaluate the feasibility of achieving production goals on the basis of these budgets
- j. demonstrate an understanding of the relationship between the overhead budget and the production budget
- k. separate costs into their fixed and variable components
- l. prepare an overhead budget
- m. identify the components of the cost of goods sold budget and prepare a cost of goods sold budget
- n. demonstrate an understanding of contribution margin per unit and total contribution margin, identify the appropriate use of these concepts, and calculate both unit and total contribution margin
- o. identify the components of the selling and administrative expense budget
- p. explain how specific components of the selling and administrative expense budget may affect the contribution margin
- q. prepare an operational (operating) budget
- r. prepare a capital expenditure budget
- s. demonstrate an understanding of the relationship between the capital expenditure budget, the cash budget, and the pro forma financial statements
- t. define the purposes of the cash budget and describe the relationship between the cash budget and all other budgets
- u. demonstrate an understanding of the relationship between credit policies and purchasing (payables) policies and the cash budget
- v. prepare a cash budget

## **Part 1 – Section B.6. Top-level planning and analysis**

The candidate should be able to:

- a. define the purpose of a pro forma income statement, a pro forma balance sheet, and a pro forma statement of cash flows; and demonstrate an understanding of the relationship among these statements and all other budgets
- b. prepare pro forma income statements based on several revenue and cost assumptions
- c. evaluate whether a company has achieved strategic objectives based on pro forma income statements
- d. use financial projections to prepare a pro forma balance sheet and a pro forma statement of cash flows
- e. identify the factors required to prepare medium- and long-term cash forecasts
- f. use financial projections to determine required outside financing and dividend policy

## **Section C. Performance Management (20% - Levels A, B, and C)**

### **Part 1 – Section C.1. Cost and variance measures**

The candidate should be able to:

- a. analyze performance against operational goals using measures based on revenue, manufacturing costs, non-manufacturing costs, and profit depending on the type of center or unit being measured
- b. explain the reasons for variances within a performance monitoring system
- c. prepare a performance analysis by comparing actual results to the master budget, calculate favorable and unfavorable variances from budget, and provide explanations for variances
- d. identify and describe the benefits and limitations of measuring performance by comparing actual results to the master budget
- e. prepare a flexible budget based on actual sales (output) volume
- f. calculate the sales-volume variance and the sales-price variance by comparing the flexible budget to the master (static) budget
- g. calculate the flexible-budget variance by comparing actual results to the flexible budget
- h. investigate the flexible-budget variance to determine individual differences between actual and budgeted input prices and input quantities
- i. explain how budget variance reporting is utilized in a management by exception environment
- j. define a standard cost system and identify the reasons for adopting a standard cost system
- k. demonstrate an understanding of price (rate) variances and calculate the price variances related to direct material and direct labor inputs
- l. demonstrate an understanding of efficiency (usage) variances and calculate the efficiency variances related to direct material and direct labor inputs
- m. demonstrate an understanding of spending and efficiency variances as they relate to fixed and variable overhead
- n. calculate a sales-mix variance and explain its impact on revenue and contribution margin
- o. calculate and explain a mix variance
- p. calculate and explain a yield variance
- q. demonstrate how price, efficiency, spending, and mix variances can be applied in service companies as well as manufacturing companies
- r. analyze factory overhead variances by calculating variable overhead spending variance, variable overhead efficiency variance, fixed overhead spending variance, and production volume variance
- s. analyze variances, identify causes, and recommend corrective actions

### **Part 1 – Section C.2. Responsibility centers and reporting segments**

The candidate should be able to:

- a. identify and explain the different types of responsibility centers
- b. recommend appropriate responsibility centers given a business scenario
- c. calculate a contribution margin
- d. analyze a contribution margin report and evaluate performance
- e. identify segments that organizations evaluate, including product lines, geographical areas, or other meaningful segments

- f. explain why the allocation of common costs among segments can be an issue in performance evaluation
- g. identify methods for allocating common costs such as stand-alone cost allocation and incremental cost allocation
- h. define transfer pricing and identify the objectives of transfer pricing
- i. identify the methods for determining transfer prices and list and explain the advantages and disadvantages of each method
- j. identify and calculate transfer prices using variable cost, full cost, market price, negotiated price, and dual-rate pricing
- k. explain how transfer pricing is affected by business issues such as the presence of outside suppliers and the opportunity costs associated with capacity usage
- l. describe how special issues such as tariffs, exchange rates, taxes, currency restrictions, expropriation risk, and the availability of materials and skills affect performance evaluation in multinational companies

### **Part 1 – Section C.3. Performance measures**

The candidate should be able to:

- a. explain why performance evaluation measures should be directly related to strategic and operational goals and objectives; why timely feedback is critical; and why performance measures should be related to the factors that drive the element being measured, e.g., cost drivers and revenue drivers
- b. explain the issues involved in determining product profitability, business unit profitability, and customer profitability, including cost measurement, cost allocation, investment measurement, and valuation
- c. calculate product-line profitability, business unit profitability, and customer profitability
- d. evaluate customers and products on the basis of profitability and recommend ways to improve profitability and/or drop unprofitable customers and products
- e. define and calculate return on investment (ROI)
- f. analyze and interpret ROI calculations
- g. define and calculate residual income (RI)
- h. analyze and interpret RI calculations
- i. compare and contrast the benefits and limitations of ROI and RI as measures of performance
- j. explain how revenue and expense recognition policies may affect the measurement of income and reduce comparability among business units
- k. explain how inventory measurement policies, joint asset sharing, and overall asset measurement policies may affect the measurement of investment and reduce comparability among business units
- l. define key performance indicators (KPIs) and discuss the importance of these indicators in evaluating a firm
- m. define the concept of a balanced scorecard and identify its components
- n. identify and describe the perspectives of a balanced scorecard, including financial, customer, internal process, and learning and growth
- o. identify and describe the characteristics of successful implementation and use of a balanced scorecard
- p. analyze and interpret a balanced scorecard and evaluate performance on the basis of the analysis

- q. recommend performance measures and a periodic reporting methodology given operational goals and actual results

## **Section D. Cost Management (20% - Levels A, B, and C)**

### **Part 1 – Section D.1. Measurement concepts**

The candidate should be able to:

- a. calculate fixed, variable, and mixed costs and demonstrate an understanding of the behavior of each in the long and short term and how a change in assumptions regarding cost type or relevant range affects these costs
- b. identify cost objects and cost pools and assign costs to appropriate activities
- c. demonstrate an understanding of the nature and types of cost drivers and the causal relationship that exists between cost drivers and costs incurred
- d. demonstrate an understanding of the various methods for measuring costs and accumulating work-in-process and finished goods inventories
- e. identify and define cost measurement techniques such as actual costing, normal costing, and standard costing; calculate costs using each of these techniques; identify the appropriate use of each technique; and describe the benefits and limitations of each technique
- f. demonstrate an understanding of variable (direct) costing and absorption (full) costing and the benefits and limitations of these measurement concepts
- g. calculate inventory costs, cost of goods sold, and operating profit using both variable costing and absorption costing
- h. demonstrate an understanding of how the use of variable costing or absorption costing affects the value of inventory, cost of goods sold, and operating income
- i. prepare summary income statements using variable costing and absorption costing
- j. determine the appropriate use of joint product and by-product costing
- k. demonstrate an understanding of concepts such as split-off point and separable costs
- l. determine the allocation of joint product and by-product costs using the physical measure method, the sales value at split-off method, constant gross profit (gross margin) method, and the net realizable value method; and describe the benefits and limitations of each method

### **Part 1 – Section D.2. Costing systems**

For each cost accumulation system identified (job order costing, process costing, activity-based costing, life-cycle costing), the candidate should be able to:

- a. define the nature of the system, understand the cost flows of the system, and identify its appropriate use
- b. calculate inventory values and cost of goods sold
- c. demonstrate an understanding of the proper accounting for normal and abnormal spoilage
- d. discuss the strategic value of cost information regarding products and services, pricing, overhead allocations, and other issues
- e. identify and describe the benefits and limitations of each cost accumulation system
- f. demonstrate an understanding of the concept of equivalent units in process costing and calculate the value of equivalent units

- g. define the elements of activity-based costing such as cost pool, cost driver, resource driver, activity driver, and value-added activity
- h. calculate product cost using an activity-based system and compare and analyze the results with costs calculated using a traditional system
- i. explain how activity-based costing can be utilized in service firms
- j. demonstrate an understanding of the concept of life-cycle costing and the strategic value of including upstream costs, manufacturing costs, and downstream costs

### **Part 1 – Section D.3. Overhead costs**

The candidate should be able to:

- a. distinguish between fixed and variable overhead expenses
- b. determine the appropriate time frame for classifying both variable and fixed overhead expenses
- c. demonstrate an understanding of the different methods of determining overhead rates, e.g., plant-wide rates, departmental rates, and individual cost driver rates
- d. describe the benefits and limitations of each of the methods used to determine overhead rates
- e. identify the components of variable overhead expense
- f. determine the appropriate allocation base for variable overhead expenses
- g. calculate the per unit variable overhead expense
- h. identify the components of fixed overhead expense
- i. identify the appropriate allocation base for fixed overhead expense
- j. calculate the fixed overhead application rate
- k. describe how fixed overhead can be over or under applied and how this difference should be accounted for in the cost of goods sold, work-in-process, and finished goods accounts
- l. compare and contrast traditional overhead allocation with activity-based overhead allocation
- m. calculate overhead expense in an activity-based costing setting
- n. identify and describe the benefits derived from activity-based overhead allocation
- o. explain why companies allocate the cost of service departments such as Human Resources or Information Technology to divisions, departments, or activities
- p. calculate service or support department cost allocations using the direct method, the reciprocal method, the step-down method, and the dual allocation method
- q. estimate fixed costs using the high-low method and demonstrate an understanding of how regression can be used to estimate fixed costs

### **Part 1 – Section D.4. Supply Chain Management**

The candidate should be able to:

- a. explain supply chain management
- b. define lean manufacturing and describe its central purpose
- c. identify and describe the operational benefits of implementing lean manufacturing
- d. define materials requirements planning (MRP)
- e. identify and describe the operational benefits of implementing a just-in-time (JIT) system
- f. identify and describe the operational benefits of enterprise resource planning (ERP)

- g. explain the concept of outsourcing and identify the benefits and limitations of choosing this option
- h. demonstrate a general understanding of the theory of constraints
- i. identify the five steps involved in theory of constraints analysis
- j. define throughput costing (super-variable costing) and calculate inventory costs using throughput costing
- k. define and calculate throughput contribution
- l. describe how capacity level affects product costing, capacity management, pricing decisions and financial statements
- m. explain how using practical capacity as denominator for fixed costs rate enhances capacity management
- n. calculate the financial impact of implementing the above mentioned methods

### **Part 1. D.5. Business process improvement**

The candidate should be able to:

- a. define value chain analysis
- b. identify the steps in value chain analysis
- c. explain how value chain analysis is used to better understand a firm's competitive advantage
- d. define, identify and provide examples of a value-added activity and explain how the value-added concept is related to improving performance
- e. demonstrate an understanding of process analysis and business process reengineering, and calculate the resulting savings
- f. define best practice analysis and discuss how it can be used by an organization to improve performance
- g. demonstrate an understanding of benchmarking process performance
- h. identify the benefits of benchmarking in creating a competitive advantage
- i. apply activity-based management principles to recommend process performance improvements
- j. explain the relationship among continuous improvement techniques, activity-based management, and quality performance
- k. explain the concept of continuous improvement and how it relates to implementing ideal standards and quality improvements
- l. describe and identify the components of the costs of quality, commonly referred to as prevention costs, appraisal costs, internal failure costs, and external failure costs
- m. calculate the financial impact of implementing the above mentioned processes
- n. identify and discuss ways to make accounting operations more efficient, including process walk-throughs, process training, identification of waste and over capacity, identifying the root cause of errors, reducing the accounting close cycle (fast close), and shared services

## **Section E. Internal Controls (15% - Levels A, B, and C)**

### **Part 1 – Section E.1 Governance, risk, and compliance**

The candidate should be able to:

- a. demonstrate an understanding of internal control risk and the management of internal control risk
- b. identify and describe internal control objectives
- c. explain how a company's organizational structure, policies, objectives, and goals, as well as its management philosophy and style, influence the scope and effectiveness of the control environment
- d. identify the Board of Directors' responsibilities with respect to ensuring that the company is operated in the best interest of shareholders
- e. identify the hierarchy of corporate governance; i.e. articles of incorporation, bylaws, policies, and procedures
- f. demonstrate an understanding of corporate governance, including rights and responsibilities of the CEO, the Board of Directors, the Audit Committee, managers and other stakeholders; and the procedures for making corporate decisions
- g. describe how internal controls are designed to provide reasonable (but not absolute) assurance regarding achievement of an entity's objectives involving (i) effectiveness and efficiency of operations, (ii) reliability of financial reporting, and (iii) compliance with applicable laws and regulations
- h. explain why personnel policies and procedures are integral to an efficient control environment
- i. define and give examples of segregation of duties
- j. explain why the following four types of functional responsibilities should be performed by different departments or different people within the same function: (i) authority to execute transactions, (ii) recording transactions, (iii) custody of assets involved in the transactions, and (iv) periodic reconciliations of the existing assets to recorded amounts
- k. demonstrate an understanding of the importance of independent checks and verification
- l. identify examples of safeguarding controls
- m. explain how the use of pre-numbered forms, as well as specific policies and procedures detailing who is authorized to receive specific documents, is a means of control
- n. define inherent risk, control risk, and detection risk
- o. define and distinguish between preventive controls and detective controls
- p. describe the major internal control provisions of the Sarbanes-Oxley Act (Sections 201, 203, 204, 302, 404, and 407)
- q. identify the role of the PCAOB in providing guidance on the auditing of internal controls
- r. differentiate between a top-down (risk-based) approach and a bottom-up approach to auditing internal controls
- s. identify the PCAOB preferred approach to auditing internal controls as outlined in Auditing Standard #5
- t. identify and describe the major internal control provisions of the Foreign Corrupt Practices Act
- u. identify and describe the five major components of COSO's Internal Control Framework (2013 update)
- v. assess the level of internal control risk within an organization and recommend risk mitigation strategies

- w. demonstrate an understanding of external auditors responsibilities, including the types of audit opinions the external auditors issue

## **Part 1 – Section E.2 Internal auditing**

The candidate should be able to:

- a. define the internal audit function and identify its functions and scope
- b. identify how internal auditors can test compliance with controls and evaluate the effectiveness of controls
- c. explain how internal auditors determine what controls to audit, when to audit, and why
- d. identify and describe control breakdowns and related risks that internal auditors should report to management or to the Board of Directors
- e. define and identify the objectives of a compliance audit and an operational audit
- f. demonstrate an understanding of the roles and responsibilities of the Chief Audit Executive (CAE)
- g. identify and understand the most effective reporting relationship of the CAE

## **Part 1 – Section E.3 Systems controls and security measures**

The candidate should be able to:

- a. describe how the segregation of accounting duties can enhance systems security
- b. identify threats to information systems, including input manipulation, program alteration, direct file alteration, data theft, sabotage, viruses, Trojan horses, theft, and phishing
- c. demonstrate an understanding of how systems development controls are used to enhance the accuracy, validity, safety, security, and adaptability of systems input, processing, output, and storage functions
- d. identify procedures to limit access to physical hardware
- e. identify means by which management can protect programs and databases from unauthorized use
- f. identify input controls, processing controls, and output controls and describe why each of these controls is necessary
- g. identify and describe the types of storage controls and demonstrate an understanding of when and why they are used
- h. identify and describe the inherent risks of using the internet as compared to data transmissions over secured transmission lines
- i. define data encryption and describe why there is a much greater need for data encryption methods when using the internet
- j. identify a firewall and its uses
- k. demonstrate an understanding of how flowcharts of activities are used to assess controls
- l. explain the importance of backing up all program and data files regularly, and storing the backups at a secure remote site
- m. define business continuity planning
- n. define the objective of a disaster recovery plan and identify the components of such a plan



# Certified Management Accountant

## Learning Outcome Statements

### Part 2 - Financial Decision Making

#### A. Financial Statement Analysis (25% - Levels A, B, and C)

##### **Part 2 – Section A.1. Basic Financial Statement Analysis**

- a. for the balance sheet and income statement prepare and analyze common-size financial statements; i.e., calculate percentage of assets and sales, respectively; also called vertical analysis
- b. for the balance sheet and income statement prepare a comparative financial statement horizontal analysis; i.e., calculate trend year over year for every item on the financial statement compared to base year
- c. calculate the growth rate of individual line items on the balance sheet and income statement

##### **Part 2 – Section A.2. Financial Ratios**

The candidate should be able to:

###### Liquidity

- a. calculate and interpret the current ratio, the quick (acid-test) ratio, the cash ratio, the cash flow ratio, and the net working capital ratio
- b. explain how changes in one or more of the elements of current assets, current liabilities, and/or unit sales can change the liquidity ratios and calculate that impact
- c. demonstrate an understanding of the liquidity of current liabilities

###### Leverage

- d. define solvency
- e. define operating leverage and financial leverage
- f. calculate degree of operating leverage and degree of financial leverage
- g. demonstrate an understanding of the effect on the capital structure and solvency of a company with a change in the composition of debt vs. equity by calculating leverage ratios
- h. calculate and interpret the financial leverage ratio, and determine the effect of a given change in capital structure on this ratio
- i. calculate and interpret the following ratios: debt to equity, long-term debt to equity, and debt to total assets
- j. define, calculate and interpret the following ratios: fixed charge coverage (earnings to fixed charges), interest coverage (times interest earned), and cash flow to fixed charges
- k. discuss how capital structure decisions affect the risk profile of a firm

### Activity

- l. calculate and interpret accounts receivable turnover, inventory turnover and accounts payable turnover
- m. calculate and interpret days sales outstanding in receivables, days sales in inventory, and days purchases in accounts payable
- n. define and calculate the operating cycle and cash cycle of a firm
- o. calculate and interpret total assets turnover and fixed asset turnover

### Profitability

- p. calculate and interpret gross profit margin percentage, operating profit margin percentage, net profit margin percentage, and earnings before interest, taxes, depreciation, and amortization (EBITDA) margin percentage
- q. calculate and interpret return on assets (ROA) and return on equity (ROE)

### Market

- r. calculate and interpret the market/book ratio, the price/earnings ratio and price to EBITDA ratio
- s. calculate and interpret book value per share
- t. identify and explain the limitations of book value per share
- u. calculate and interpret basic and diluted earnings per share
- v. calculate and interpret earnings yield, dividend yield, dividend payout ratio and shareholder return

### General

- w. identify the limitations of ratio analysis
- x. demonstrate a familiarity with the sources of financial information about public companies and industry ratio averages
- y. evaluate the financial strength and performance of an entity based on multiple ratios

## **Part 2 – Section A.3. Profitability analysis**

- a. demonstrate an understanding of the factors that contribute to inconsistent definitions of “equity,” “assets” and “return” when using ROA and ROE
- b. determine the effect on return on total assets of a change in one or more elements of the financial statements
- c. identify factors to be considered in measuring income, including estimates, accounting methods, disclosure incentives, and the different needs of users
- d. explain the importance of the source, stability, and trend of sales and revenue
- e. demonstrate an understanding of the relationship between revenue and receivables and revenue and inventory
- f. determine and analyze the effect on revenue of changes in revenue recognition and measurement methods
- g. analyze cost of sales by calculating and interpreting the gross profit margin
- h. distinguish between gross profit margin, operating profit margin and net profit margin and analyze the effects of changes in the components of each
- i. define and perform a variation analysis (percentage change over time)
- j. calculate and interpret sustainable equity growth

## **Part 2 – Section A.4. Special issues**

The candidate should be able to:

- a. demonstrate an understanding of the impact of foreign exchange fluctuations
  1. identify and explain issues in the accounting for foreign operations (e.g., historical vs. current rate and the treatment of translation gains and losses)
  2. define functional currency
  3. calculate the financial ratio impact of a change in exchange rates
  4. discuss the possible impact on management and investor behavior of volatility in reported earnings
- b. demonstrate an understanding of the impact of inflation on financial ratios and the reliability of financial ratios
- c. define and explain off-balance sheet financing
  1. identify and describe the following forms of off-balance sheet financing: (i) leases; (ii) special purpose entities; (iii) sale of receivables; and (iv) joint ventures
  2. explain why companies use off-balance sheet financing
  3. calculate the impact of off-balance sheet financing on the debt to equity ratio
- d. describe how to adjust financial statements for changes in accounting treatments (principles, estimates, and errors) and how these adjustments impact financial ratios
- e. distinguish between book value and market value; and distinguish between accounting profit and economic profit
- f. identify the determinants and indicators of earnings quality, and explain why they are important

## **B. Corporate Finance (20% - Levels A, B, and C)**

### **Part 2 – Section B.1. Risk and return**

The candidate should be able to:

- a. calculate rates of return
- b. identify and demonstrate an understanding of systematic (market) risk and unsystematic (company) risk
- c. identify and demonstrate an understanding of credit risk, foreign exchange risk, interest rate risk, market risk, industry risk and political risk
- d. demonstrate an understanding of the relationship between risk and return
- e. distinguish between individual security risk and portfolio risk
- f. demonstrate an understanding of diversification
- g. define beta and explain how a change in beta impacts a security's price
- h. demonstrate an understanding of the Capital Asset Pricing Model (CAPM) and calculate the expected risk-adjusted returns using CAPM

## **Part 2 – Section B.2. Long-term financial management**

The candidate should be able to:

- a. describe the term structure of interest rates, and explain why it changes over time
- b. define and identify the characteristics of common stock and preferred stock
- c. identify and describe the basic features of a bond such as maturity, par value, coupon rate, provisions for redeeming, conversion provisions, covenants, options granted to the issuer or investor, indentures, and restrictions
- d. identify and evaluate debt issuance or refinancing strategies
- e. value bonds, common stock, and preferred stock using discounted cash flow methods
- f. demonstrate an understanding of duration as a measure of bond interest rate sensitivity
- g. explain how income taxes impact financing decisions
- h. define and demonstrate an understanding of derivatives and their uses
- i. identify and describe the basic features of futures and forwards
- j. distinguish a long position from a short position
- k. define options and distinguish between a call and a put by identifying the characteristics of each
- l. define exercise price, strike price, option premium and intrinsic value
- m. demonstrate an understanding of the interrelationship of the variables that comprise the value of an option; e.g., relationship between exercise price and strike price, and value of a call
- n. define swaps for interest rate and foreign currency
- o. define and identify characteristics of other sources of long-term financing, such as leases, convertible securities, and warrants
- p. demonstrate an understanding of the relationship among inflation, interest rates, and the prices of financial instruments
- q. define the cost of capital and demonstrate an understanding of its applications in capital structure decisions
- r. determine the weighted average (historical) cost of capital and the cost of its individual components
- s. calculate the marginal cost of capital
- t. explain the importance of using marginal cost as opposed to historical cost
- u. demonstrate an understanding of the use of the cost of capital in capital investment decisions
- v. demonstrate an understanding of how income taxes impact capital structure and capital investment decisions
- w. use the constant growth dividend discount model to value stock and demonstrate an understanding of the two-stage dividend discount model
- x. demonstrate an understanding of relative or comparable valuation methods, such as price/earnings (P/E) ratios, market/book ratios, and price/sales ratios

## **Part 2 – Section B.3. Raising capital**

The candidate should be able to:

- a. identify the characteristics of the different types of financial markets and exchanges
- b. demonstrate an understanding of the concept of market efficiency, including the strong form, semi-strong form, and weak form of market efficiency
- c. describe the role of the credit rating agencies

- d. demonstrate an understanding of the roles of investment banks, including underwriting, advice, and trading
- e. define initial public offerings (IPOs)
- f. define subsequent/secondary offerings
- g. describe lease financing, explain its benefits and disadvantages, and calculate the net advantage to leasing using discounted cash flow concepts
- h. define the different types of dividends, including cash dividends, stock dividends, and stock splits
- i. identify and discuss the factors that influence the dividend policy of a firm
- j. demonstrate an understanding of the dividend payment process for both common and preferred stock
- k. define share repurchase and explain why a firm would repurchase its stock
- l. define insider trading and explain why it is illegal

## **Part 2 – Section B.4. Working capital management**

The candidate should be able to:

### Working capital

- a. define working capital and identify its components
- b. calculate net working capital
- c. explain the benefit of short-term financial forecasts in the management of working capital

### Cash

- d. identify and describe factors influencing the levels of cash
- e. identify and explain the three motives for holding cash
- f. prepare forecasts of future cash flows
- g. identify methods of speeding up cash collections
- h. calculate the net benefit of a lockbox system
- i. define concentration banking
- j. demonstrate an understanding of compensating balances
- k. identify methods of slowing down disbursements
- l. demonstrate an understanding of disbursement float and overdraft systems

### Marketable securities

- m. identify and describe reasons for holding marketable securities
- n. define the different types of marketable securities, including money market instruments, T-bills, treasury notes, treasury bonds, repurchase agreements, Federal agency securities, bankers' acceptances, commercial paper, negotiable CDs, Eurodollar CDs, and other marketable securities
- o. evaluate the trade-offs among the variables in marketable security selections, including safety, marketability, yield, maturity, and taxability
- p. demonstrate an understanding of the risk and return trade-off

### Accounts receivable

- q. identify the factors influencing the level of receivables
- r. demonstrate an understanding of the impact of changes in credit terms or collection policies on accounts receivable, working capital and sales volume
- s. define default risk
- t. identify and explain the factors involved in determining an optimal credit policy

### Inventory

- u. define lead time and safety stock; identify reasons for carrying inventory and the factors influencing its level
- v. identify and calculate the costs related to inventory, including carrying costs, ordering costs and shortage (stockout) costs
- w. explain how a just-in-time (JIT) inventory management system helps manage inventory
- x. identify the interaction between high inventory turnover and high gross margin (calculation not required)
- y. demonstrate an understanding of economic order quantity (EOQ) and how a change in one variable would affect the EOQ (calculation not required)

### Short-term credit and working capital cost management

- z. demonstrate an understanding of how risk affects a firm's approach to its current asset financing policy (aggressive, conservative, etc.)
- aa. identify and describe the different types of short-term credit, including trade credit, short-term bank loans, commercial paper, lines of credit, and bankers' acceptances
- bb. estimate the annual cost and effective annual interest rate of not taking a cash discount
- cc. calculate the effective annual interest rate of a bank loan with a compensating balance requirement and/or a commitment fee
- dd. demonstrate an understanding of factoring accounts receivable and calculate the cost of factoring
- ee. explain the maturity matching or hedging approach to financing
- ff. demonstrate an understanding of the factors involved in managing the costs of working capital

### General

- gg. recommend a strategy for managing current assets that would fulfill a given objective

## **Part 2 – Section B.5. Corporate restructuring**

The candidate should be able to:

- a. demonstrate an understanding of the following:
  - i. mergers and acquisitions, including horizontal, vertical, and conglomerate
  - ii. leveraged buyouts
- b. identify defenses against takeovers (e.g., golden parachute, leveraged recapitalization, poison pill (shareholders' rights plan), staggered board of directors, fair price, voting rights plan, white knight)
- c. identify and describe divestiture concepts such as spin-offs, split-ups, equity carve-outs, and tracking stock
- d. evaluate key factors in a company's financial situation and determine if a restructuring would be beneficial to the shareholders
- e. validate possible synergies in targeted mergers and acquisitions
- f. define bankruptcy
- g. differentiate between reorganization and liquidation
- h. value a business, a business segment, and a business combination using discounted cash flow method
- i. evaluate a proposed business combination and make a recommendation based on both quantitative and qualitative considerations

## **Part 2 – Section B.6. International finance**

The candidate should be able to:

- a. demonstrate an understanding of foreign currencies and how foreign currency affects the prices of goods and services
- b. identify the variables that affect exchange rates
- c. calculate whether a currency has depreciated or appreciated against another currency over a period of time, and evaluate the impact of the change
- d. demonstrate how currency futures, currency swaps, and currency options can be used to manage exchange rate risk
- e. calculate the net profit/loss of cross-border transactions, and evaluate the impact of this net profit/loss
- f. recommend methods of managing exchange rate risk and calculate the net profit/loss of your strategy
- g. identify and explain the benefits of international diversification
- h. identify and explain common trade financing methods, including cross-border factoring, letters of credit, banker's acceptances, forfaiting, and countertrade
- i. demonstrate an understanding of how transfer pricing affects effective worldwide tax rate

### **C. Decision Analysis (20% - Levels A, B, and C)**

## **Part 2 – Section C.1. Cost/volume/profit analysis**

The candidate should be able to:

- a. demonstrate an understanding of how cost/volume/profit (CVP) analysis (break-even analysis) is used to examine the behavior of total revenues, total costs, and operating income as changes occur in output levels, selling prices, variable costs per unit, or fixed costs
- b. calculate operating income at different operating levels
- c. differentiate between costs that are fixed and costs that are variable with respect to levels of output
- d. explain why the classification of fixed vs. variable costs is affected by the time-frame being considered
- e. calculate contribution margin per unit and total contribution margin
- f. calculate the breakeven point in units and dollar sales to achieve targeted operating income or targeted net income
- g. demonstrate an understanding of how changes in unit sales mix affect operating income in multiple-product situations
- h. calculate multiple-product breakeven points given percentage share of sales and explain why there is no unique breakeven point in multiple-product situations
- i. define, calculate and interpret margin of safety and margin of safety ratio
- j. explain how sensitivity analysis can be used in CVP analysis when there is uncertainty about sales
- k. analyze and recommend a course of action using CVP analysis
- l. demonstrate an understanding of the impact of income taxes on CVP analysis

## **Part 2 – Section C.2. Marginal analysis**

The candidate should be able to:

- a. identify and define relevant costs (incremental, marginal, or differential costs), sunk costs, avoidable costs, explicit and implicit costs, and relevant revenues
- b. explain why sunk costs are not relevant in the decision-making process
- c. demonstrate an understanding of and calculate opportunity costs
- d. calculate relevant costs given a numerical scenario
- e. define and calculate marginal cost and marginal revenue
- f. identify and calculate total cost, average fixed cost, average variable cost, and average total cost
- g. demonstrate proficiency in the use of marginal analysis for decisions such as (a) introducing a new product or changing output levels of existing products, (b) accepting or rejecting special orders, (c) making or buying a product or service, (d) selling a product or performing additional processes and selling a more value-added product, and (e) adding or dropping a segment
- h. calculate the effect on operating income of a decision to accept or reject a special order when there is idle capacity and the order has no long-run implications
- i. identify and describe qualitative factors in make-or-buy decisions, such as product quality and dependability of suppliers
- j. calculate the effect on operating income of a make-or-buy decision
- k. calculate the effects on operating income of a decision to sell or process further; and of a decision to drop or add a segment
- l. identify the effects of changes in capacity on production decisions
- m. demonstrate an understanding of the impact of income taxes on marginal analysis
- n. recommend a course of action using marginal analysis

## **Part 2– Section C.3. Pricing**

The candidate should be able to:

- a. identify different pricing methodologies, including market comparables, cost-based, and value-based approaches
- b. differentiate between a cost-based approach (cost-plus pricing, mark-up pricing) and a market-based approach to setting prices
- c. calculate selling price using a cost-based approach
- d. demonstrate an understanding of how the pricing of a product or service is affected by the demand for and supply of the product or service, as well as the market structure within which it operates
- e. demonstrate an understanding of the impact of cartels on pricing
- f. demonstrate an understanding of the short-run equilibrium price for the firm in (1) pure competition; (2) monopolistic competition; (3) oligopoly; and (4) monopoly using the concepts of marginal revenue and marginal cost
- g. identify techniques used to set prices based on understanding customers' perceptions of value, competitors' technologies, products and costs
- h. define and demonstrate an understanding of target pricing and target costing and identify the main steps in developing target prices and target costs



- i. define value engineering
- j. calculate the target operating income per unit and target cost per unit
- k. define and distinguish between a value-added cost and a nonvalue-added cost
- l. define the pricing technique of cost plus target rate of return
- m. calculate the price elasticity of demand using the midpoint formula
- n. define and explain elastic and inelastic demand
- o. estimate total revenue given changes in prices and demand as well as elasticity
- p. discuss how pricing decisions can differ in the short-run and in the long-run
- q. define product life cycle and explain why pricing decisions might differ over the life of a product
- r. evaluate and recommend pricing strategies under specific market conditions

## **Section D. Risk Management (10% - Levels A, B, and C)**

### **Part 2– Section D.1. Enterprise risk**

The candidate should be able to:

- a. identify and explain the different types of risk, including business risk, hazard risks, financial risks, operational risks, and strategic risks
- b. demonstrate an understanding of operational risk
- c. define legal risk, compliance risk, and political risk
- d. demonstrate an understanding of how volatility and time impact risk
- e. define the concept of capital adequacy (i.e., solvency, liquidity, reserves, sufficient capital, etc.)
- f. explain the use of probabilities in determining exposure to risk and calculate expected loss given a set of probabilities
- g. define the concepts of unexpected loss and maximum possible loss (extreme or catastrophic loss)
- h. identify strategies for risk response (or treatment), including actions to avoid, retain, reduce (mitigate), transfer (share), and exploit (accept) risks
- i. define risk transfer (e.g., purchasing insurance, issuing debt)
- j. demonstrate an understanding of the concept of residual risk and distinguish it from inherent risk
- k. identify and explain the benefits of risk management
- l. identify and describe the key steps in the risk management process
- m. explain how attitude toward risk might affect the management of risk
- n. demonstrate a general understanding of the use of liability/hazard insurance to mitigate risk (detailed knowledge not required)
- o. identify methods of managing operational risk
- p. identify and explain financial risk management methods
- q. identify and explain qualitative risk assessment tools including risk identification, risk ranking, and risk maps
- r. identify and explain quantitative risk assessment tools including cash flow at risk, earnings at risk, earnings distributions, and earnings per share (EPS) distributions
- s. identify and explain Value at Risk (VaR) (calculations not required)
- t. define enterprise risk management (ERM) and identify and describe key objectives, components and benefits of an ERM program

- u. identify event identification techniques and provide examples of event identification within the context of an ERM approach
- v. explain the role of corporate governance, risk analytics, and portfolio management in an ERM program
- w. evaluate scenarios and recommend risk mitigation strategies
- x. prepare a cost-benefit analysis and demonstrate an understanding of its uses in risk assessment and decision making
- y. demonstrate an understanding of the COSO ERM conceptual framework

## **Section E. Investment Decisions (15% - Levels A, B, and C)**

### **Part 2 – Section E.1. Capital budgeting process**

The candidate should be able to:

- a. define capital budgeting and identify the steps or stages undertaken in developing and implementing a capital budget for a project
- b. identify and calculate the relevant cash flows of a capital investment project on both a pretax and after-tax basis
- c. demonstrate an understanding of how income taxes affect cash flows
- d. distinguish between cash flows and accounting profits and discuss the relevance to capital budgeting of incremental cash flow, sunk cost, and opportunity cost
- e. explain the importance of changes in net working capital in capital budgeting
- f. discuss how the effects of inflation are reflected in capital budgeting analysis
- g. define hurdle rate
- h. identify and discuss qualitative considerations involved in the capital budgeting decision
- i. describe the role of the post-audit in the capital budgeting process

### **Part 2 – Section E.2. Discounted cash flow analysis**

The candidate should be able to:

- a. demonstrate an understanding of the two main discounted cash flow (DCF) methods, net present value (NPV) and internal rate of return (IRR)
- b. calculate NPV and IRR
- c. demonstrate an understanding of the decision criteria used in NPV and IRR analyses to determine acceptable projects
- d. compare NPV and IRR focusing on the relative advantages and disadvantages of each method, particularly with respect to independent versus mutually exclusive projects and the “multiple IRR problem”
- e. explain why NPV and IRR methods can produce conflicting rankings for capital projects if not applied properly
- f. identify assumptions of NPV and IRR
- g. evaluate and recommend project investments on the basis of DCF analysis

### **Part 2 – Section E.3. Payback and discounted payback**

The candidate should be able to:

- a. demonstrate an understanding of the payback and discounted payback methods

- b. identify the advantages and disadvantages of the payback and discounted payback methods
- c. calculate payback periods and discounted payback periods

## **Part 2 – Section E.4. Risk analysis in capital investment**

The candidate should be able to:

- a. identify alternative approaches to dealing with risk in capital budgeting
- b. distinguish among sensitivity analysis, scenario analysis, and Monte Carlo simulation as risk analysis techniques
- c. explain why a rate specifically adjusted for risk should be used when project cash flows are more or less risky than is normal for a firm
- d. explain how the value of a capital investment is increased if consideration is given to the possibility of adding on, speeding up, slowing up, or discontinuing early
- e. demonstrate an understanding of real options and identify examples of the different types of real options: e.g., abandon, delay, expand, and scale back (calculations not required)

## **Section F. Professional Ethics (10% - Levels A, B, and C)**

*Ethics may be tested in conjunction with any topic area.*

## **Part 2 – Section F.1 Ethical considerations for management accounting and financial management professionals**

Using the standards outlined in **IMA’s Statement of Ethical Professional Practice**, the candidate should be able to:

- a. identify and describe the four overarching ethical principles
- b. evaluate a given business situation for its ethical implications
- c. identify and describe relevant standards that may have been violated in a given business situation and explain why the specific standards are applicable
- d. recommend a course of action for management accountants or financial managers to take when confronted with an ethical dilemma in the business environment
- e. evaluate and propose resolutions for ethical issues such as fraudulent reporting, manipulation of analyses, results, and budgets

Using the Fraud Triangle model, the candidate should be able to:

- f. identify the three components of the triangle
- g. use the model to explain how a management accounting and financial management professional can identify and manage the risk of fraud

## **Part 2 – Section F.2. Ethical considerations for the organization**

The candidate should be able to:

- a. identify the purpose of the U.S. Foreign Corrupt Practices Act
- b. identify the practices that the U.S Foreign Corrupt Practices Act prohibits, and explain how to apply this act to typical business situations
- c. apply relevant provisions of IMA’s Statement on Management Accounting, “Values and Ethics: From Inception to Practice” to a business situation
- d. discuss corporate responsibility for ethical conduct
- e. explain why it is important for an organization to have a code of conduct
- f. demonstrate an understanding of the ways ethical values benefit an organization
- g. demonstrate an understanding of the differences between ethical and legal behavior
- h. demonstrate an understanding of role of “leadership by example” or “tone at the top” in determining an organization’s ethical environment
- i. explain the importance of human capital to an organization in creating a climate where “doing the right thing” is expected (i.e., hiring the right people, providing them with training, and practicing consistent values-based leadership)
- j. explain how an organization’s culture impacts its behavioral values
- k. explain the importance of an organization’s core values in explaining its ethical behavior
- l. discuss the importance of employee training to maintaining an ethical organizational culture
- m. describe the following methods to monitor ethical compliance: human performance feedback loop and survey tools
- n. explain the importance of a whistleblowing framework (e.g., ethics helpline) to maintaining an ethical organizational culture
- o. identify the requirements of SOX Section 406 - Code of Ethics for Senior Financial Officers
- p. discuss the issues organizations face in applying their values and ethical standards internationally
- q. demonstrate an understanding of the relationship between ethics and internal controls



*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

CMA Part 1 – Financial Reporting, Planning, Performance, and Control

Examination Practice Questions

# CMA Part 1 – Financial Reporting, Planning, Performance, and Control

## Examination Practice Questions

Answers to Examination Practice Questions on page 151

### Section A: External Financial Reporting Decisions

1. *CSO: 1A1a LOS: 1A1a*  
The financial statements included in the annual report to the shareholders are **least** useful to which one of the following?
  - a. Stockbrokers.
  - b. Bankers preparing to lend money.
  - c. Competing businesses.
  - d. Managers in charge of operating activities.
  
2. *CSO: 1A1d LOS: 1A1e*  
Which one of the following would result in a decrease to cash flow in the indirect method of preparing a statement of cash flows?
  - a. Amortization expense.
  - b. Decrease in income taxes payable.
  - c. Proceeds from the issuance of common stock.
  - d. Decrease in inventories.
  
3. *CSO: 1A1c LOS: 1A1b*  
The statement of shareholders' equity shows a
  - a. reconciliation of the beginning and ending balances in shareholders' equity accounts.
  - b. listing of all shareholders' equity accounts and their corresponding dollar amounts.
  - c. computation of the number of shares outstanding used for earnings per share calculations.
  - d. reconciliation of the beginning and ending balances in the Retained Earnings account.
  
4. *CSO: 1A1d LOS: 1A1b*  
When using the statement of cash flows to evaluate a company's continuing solvency, the **most** important factor to consider is the cash
  - a. balance at the end of the period.
  - b. flows from (used for) operating activities.
  - c. flows from (used for) investing activities.
  - d. flows from (used for) financing activities.

5. *CSO: 1A1a LOS: 1A1b*

A statement of financial position provides a basis for all of the following **except**

- a. computing rates of return.
- b. evaluating capital structure.
- c. assessing liquidity and financial flexibility.
- d. determining profitability and assessing past performance.

6. *CSO: 1A1b LOS: 1A1b*

The financial statement that provides a summary of the firm's operations for a period of time is the

- a. income statement.
- b. statement of financial position.
- c. statement of shareholders' equity.
- d. statement of retained earnings.

7. *CSO: 1A1b LOS: 1A1e*

Bertram Company had a balance of \$100,000 in Retained Earnings at the beginning of the year and \$125,000 at the end of the year. Net income for this time period was \$40,000. Bertram's Statement of Financial Position indicated that Dividends Payable had decreased by \$5,000 throughout the year, despite the fact that both cash dividends and a stock dividend were declared. The amount of the stock dividend was \$8,000. When preparing its Statement of Cash Flows for the year, Bertram should show Cash Paid for Dividends as

- a. \$20,000.
- b. \$15,000.
- c. \$12,000.
- d. \$5,000.

8. *CSO: 1A1b LOS: 1A1c*

All of the following are elements of an income statement **except**

- a. expenses.
- b. shareholders' equity.
- c. gains and losses.
- d. revenue.

9. *CSO: 1A1d LOS: 1A1c*  
Dividends paid to company shareholders would be shown on the statement of cash flows as
- operating cash inflows.
  - operating cash outflows.
  - cash flows from investing activities.
  - cash flows from financing activities.
10. *CSO: 1A1d LOS: 1A1c*  
All of the following are classifications on the statement of cash flows **except**
- operating activities.
  - equity activities.
  - investing activities.
  - financing activities.
11. *CSO: 1A1d LOS: 1A1c*  
The sale of available-for-sale securities should be accounted for on the statement of cash flows as a(n)
- operating activity.
  - investing activity.
  - financing activity.
  - noncash investing and financing activity.
12. *CSO: 1A1d LOS: 1A1c*  
A statement of cash flows prepared using the indirect method would have cash activities listed in which one of the following orders?
- Financing, investing, operating.
  - Investing, financing, operating.
  - Operating, financing, investing.
  - Operating, investing, financing.
13. *CSO: 1A1d LOS: 1A1e*  
Kelli Company acquired land by assuming a mortgage for the full acquisition cost. This transaction should be disclosed on Kelli's Statement of Cash Flows as a(n)
- financing activity.
  - investing activity.
  - operating activity.
  - noncash financing and investing activity.



14. *CSO: 1A1d LOS: 1A1e*  
Which one of the following should be classified as an operating activity on the statement of cash flows?
- a. A decrease in accounts payable during the year.
  - b. An increase in cash resulting from the issuance of previously authorized common stock.
  - c. The purchase of additional equipment needed for current production.
  - d. The payment of a cash dividend from money arising from current operations.
15. *CSO: 1A1a LOS: 1A1d*  
All of the following are limitations to the information provided on the statement of financial position **except** the
- a. quality of the earnings reported for the enterprise.
  - b. judgments and estimates used regarding the collectability, salability, and longevity of assets.
  - c. omission of items that are of financial value to the business such as the worth of the employees.
  - d. lack of current valuation for most assets and liabilities.
16. *CSO: 1A1d LOS: 1A1c*  
The most commonly used method for calculating and reporting a company's net cash flow from operating activities on its statement of cash flows is the
- a. direct method.
  - b. indirect method.
  - c. single-step method.
  - d. multiple-step method.
17. *CSO: 1A1d LOS: 1A1c*  
The presentation of the major classes of operating cash receipts (such as receipts from customers) less the major classes of operating cash disbursements (such as cash paid for merchandise) is **best** described as the
- a. direct method of calculating net cash provided or used by operating activities.
  - b. cash method of determining income in conformity with generally accepted accounting principles.
  - c. format of the statement of cash flows.
  - d. indirect method of calculating net cash provided or used by operating activities.

18. *CSO: 1A1a LOS: 1A1e*  
When a fixed asset is sold for less than book value, which one of the following will decrease?
- Total current assets.
  - Current ratio.
  - Net profit.
  - Net working capital.
19. *CSO: 1A1a LOS: 1A1e*  
Stanford Company leased some special-purpose equipment from Vincent Inc. under a long-term lease that was treated as an operating lease by Stanford. After the financial statements for the year had been issued, it was discovered that the lease should have been treated as a capital lease by Stanford. All of the following measures relating to Stanford would be affected by this discovery **except** the
- debt/equity ratio.
  - accounts receivable turnover.
  - fixed asset turnover.
  - net income percentage.
20. *CSO: 1A1d LOS: 1A1e*  
Larry Mitchell, Bailey Company's controller, is gathering data for the Statement of Cash Flows for the most recent year end. Mitchell is planning to use the direct method to prepare this statement, and has made the following list of cash inflows for the period.
- Collections of \$100,000 for goods sold to customers.
  - Securities purchased for investment purposes with an original cost of \$100,000 sold for \$125,000.
  - Proceeds from the issuance of additional company stock totaling \$10,000.
- The correct amount to be shown as cash inflows from operating activities is
- \$100,000.
  - \$135,000.
  - \$225,000.
  - \$235,000.
21. *CSO: 1A1d LOS: 1A1e*  
During the year, Deltech Inc. acquired a long-term productive asset for \$5,000 and also borrowed \$10,000 from a local bank. These transactions should be reported on Deltech's Statement of Cash Flows as
- Outflows for Investing Activities, \$5,000; Inflows from Financial Activities, \$10,000.
  - Inflows from Investing Activities, \$10,000; Outflows for Financing Activities, \$5,000.
  - Outflows for Operating Activities, \$5,000; Inflows from Financing Activities, \$10,000.
  - Outflows for Financing Activities, \$5,000; Inflows from Investing Activities, \$10,000.

22. *CSO: 1A1d LOS: 1A1e*

Atwater Company has recorded the following payments for the current period.

Purchase Trillium stock	\$300,000
Dividends paid to Atwater shareholders	200,000
Repurchase of Atwater Company stock	400,000

The amount to be shown in the Investing Activities Section of Atwater's Cash Flow Statement should be

- a. \$300,000.
- b. \$500,000.
- c. \$700,000.
- d. \$900,000.

23. *CSO: 1A1d LOS: 1A1e*

Carlson Company has the following payments recorded for the current period.

Dividends paid to Carlson shareholders	\$150,000
Interest paid on bank loan	250,000
Purchase of equipment	350,000

The total amount of the above items to be shown in the Operating Activities Section of Carlson's Cash Flow Statement should be

- a. \$150,000.
- b. \$250,000.
- c. \$350,000.
- d. \$750,000.

24. *CSO: 1A1d LOS: 1A1e*

Barber Company has recorded the following payments for the current period.

Interest paid on bank loan	\$300,000
Dividends paid to Barber shareholders	200,000
Repurchase of Barber Company stock	400,000

The amount to be shown in the Financing Activities Section of Barber's Cash Flow Statement should be

- a. \$300,000.
- b. \$500,000.
- c. \$600,000.
- d. \$900,000.

25. CSO: 1A1d LOS: 1A1e

Selected financial information for Kristina Company for the year just ended is shown below.

Net income	\$2,000,000
Increase in accounts receivable	300,000
Decrease in inventory	100,000
Increase in accounts payable	200,000
Depreciation expense	400,000
Gain on the sale of available-for-sale securities	700,000
Cash received from the issue of common stock	800,000
Cash paid for dividends	80,000
Cash paid for the acquisition of land	1,500,000
Cash received from the sale of available-for-sale securities	2,800,000

Kristina's cash flow from financing activities for the year is

- a. \$(80,000).
- b. \$720,000.
- c. \$800,000.
- d. \$3,520,000.

26. CSO: 1A1d LOS: 1A1e

Selected financial information for Kristina Company for the year just ended is shown below.

Net income	\$2,000,000
Increase in accounts receivable	300,000
Decrease in inventory	100,000
Increase in accounts payable	200,000
Depreciation expense	400,000
Gain on the sale of available-for-sale securities	700,000
Cash received from the issue of common stock	800,000
Cash paid for dividends	80,000
Cash paid for the acquisition of land	1,500,000
Cash received from the sale of available-for-sale securities	2,800,000

Kristina's cash flow from investing activities for the year is

- a. \$(1,500,000).
- b. \$1,220,000.
- c. \$1,300,000.
- d. \$2,800,000.

27. CSO: 1A1d LOS: 1A1e

For the fiscal year just ended, Doran Electronics had the following results.

Net income	\$920,000
Depreciation expense	110,000
Increase in accounts payable	45,000
Increase in accounts receivable	73,000
Increase in deferred income tax liability	16,000

Doran's net cash flow from operating activities is

- a. \$928,000.
- b. \$986,000.
- c. \$1,018,000.
- d. \$1,074,000.

28. CSO: 1A1d LOS: 1A1e

Three years ago, James Company purchased stock in Zebra Inc. at a cost of \$100,000. This stock was sold for \$150,000 during the current fiscal year. The result of this transaction should be shown in the Investing Activities Section of James' Statement of Cash Flows as

- a. Zero.
- b. \$50,000.
- c. \$100,000.
- d. \$150,000.

29. CSO: 1A1d LOS: 1A1e

Madden Corporation's controller has gathered the following information as a basis for preparing the Statement of Cash Flows. Net income for the current year was \$82,000. During the year, old equipment with a cost of \$60,000 and a net carrying value of \$53,000 was sold for cash at a gain of \$10,000. New equipment was purchased for \$100,000. Shown below are selected closing balances for last year and the current year.

	<u>Last Year</u>	<u>Current Year</u>
Cash	\$ 39,000	\$ 85,000
Accounts receivable net	43,000	37,000
Inventories	93,000	105,000
Equipment	360,000	400,000
Accumulated depreciation - equipment	70,000	83,000
Accounts payable	22,000	19,000
Notes payable	100,000	100,000
Common stock	250,000	250,000
Retained earnings	93,000	175,000

Madden's cash inflow from operating activities for the current year is

- a. \$63,000.
- b. \$73,000.
- c. \$83,000.
- d. \$93,000.

30. CSO: 1A1d LOS: 1A1e

Selected financial information for Kristina Company for the year just ended is shown below.

Net income	\$2,000,000
Increase in accounts receivable	300,000
Decrease in inventory	100,000
Increase in accounts payable	200,000
Depreciation expense	400,000
Gain on the sale of available-for-sale securities	700,000
Cash receivable from the issue of common stock	800,000
Cash paid for dividends	80,000
Cash paid for the acquisition of land	1,500,000
Cash received from the sale of available-for-sale securities	2,800,000

Assuming the indirect method is used, Kristina's cash flow from operating activities for the year is

- a. \$1,700,000.
- b. \$2,000,000.
- c. \$2,400,000.
- d. \$3,100,000.

31. *CSO: 1A2a LOS: 1A2a*  
A change in the estimate for bad debts should be
- a. treated as an error.
  - b. handled retroactively.
  - c. considered as an extraordinary item.
  - d. treated as affecting only the period of the change.

32. *CSO: 1A2a LOS: 1A2d*  
Finer Foods Inc., a chain of supermarkets specializing in gourmet food, has been using the average cost method to value its inventory. During the current year, the company changed to the first-in, first-out method of inventory valuation. The president of the company reasoned that this change was appropriate since it would more closely match the flow of physical goods. This change should be reported on the financial statements as
- a. cumulative-effect type accounting change.
  - b. retroactive-effect type accounting change
  - c. change in an accounting estimate.
  - d. correction of an error.

## **Section B: Planning, Budgeting and Forecasting**

33. *CSO: 1B2a LOS: 1B2b*

Cerawell Products Company is a ceramics manufacturer that is facing several challenges in its operations due to economic and industry conditions. The company is currently preparing its annual plan and budget. Which one of the following is subject to the **least** control by the management of Cerawell in the current fiscal year?

- a. A new machine that was purchased this year has not helped reduce Cerawell's unfavorable labor efficiency variances.
- b. A competitor has achieved an unexpected technological breakthrough that has given them a significant quality advantage, and has caused Cerawell to lose market share.
- c. Vendors have asked that the contract price for the goods they supply to Cerawell be renegotiated and adjusted for inflation.
- d. Experienced employees have decided to terminate their employment with Cerawell and go to work for the competition.

34. *CSO: 1B2a LOS: 1B2e*  
All of the following are advantages of the use of budgets in a management control system **except** that budgets
- force management planning.
  - provide performance criteria.
  - promote communication and coordination within the organization.
  - limit unauthorized expenditures.
35. *CSO: 1B2b LOS: 1B2e*  
In developing the budget for the next year, which one of the following approaches would most likely result in a successful budget with the **greatest** amount of positive motivation and goal congruence?
- Permit the divisional manager to develop the goal for the division that in the manager's view will generate the greatest amount of profits.
  - Have senior management develop the overall goals and permit the divisional manager to determine how these goals will be met.
  - Have the divisional and senior management jointly develop goals and objectives while constructing the corporation's overall plan of operation.
  - Have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.
36. *CSO: 1B2b LOS: 1B2e*  
Which one of the following statements concerning approaches for the budget development process is **correct**?
- The authoritative approach to budgeting discourages strict adherence to strategic organizational goals.
  - To prevent ambiguity, once departmental budgeted goals have been developed, they should remain fixed even if the sales forecast upon which they are based proves to be wrong in the middle of the fiscal year.
  - With the information technology available, the role of budgets as an organizational communication device has declined.
  - Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.
37. *CSO: 1B2b LOS: 1B2e*  
Which one of the following items would **most** likely cause the planning and budgeting system to fail? The lack of
- historical financial data.
  - input from several levels of management.
  - top management support.
  - adherence to rigid budgets during the year.



38. *CSO: 1B2b LOS: 1B2e*  
All of the following are disadvantages of authoritative budgeting as opposed to participatory budgeting, **except** that it
- a. may result in a budget that is not possible to achieve.
  - b. may limit the acceptance of proposed goals and objectives.
  - c. reduces the communication between employees and management.
  - d. reduces the time required for budgeting.
39. *CSO: 1B2d LOS: 1B2m*  
All of the following statements concerning standard costs are correct **except** that
- a. time and motion studies are often used to determine standard costs.
  - b. standard costs are usually set for one year.
  - c. standard costs can be used in costing inventory accounts.
  - d. standard costs are usually stated in total, while budgeted costs are usually stated on a per-unit basis.
40. *CSO: 1B2d LOS: 1B2o*  
One approach for developing standard costs incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management. This approach would **best** be characterized as a(n)
- a. imposed approach.
  - b. authoritative approach.
  - c. engineering approach.
  - d. participative approach.
41. *CSO: 1B2d LOS: 1B2n*  
When compared with ideal standards, practical standards
- a. produce lower per-unit product costs.
  - b. result in a less desirable basis for the development of budgets.
  - c. incorporate very generous allowances for spoilage and worker inefficiencies.
  - d. serve as a better motivating target for manufacturing personnel.

42. CSO: 1B2d LOS: 1B2q

Jura Corporation is developing standards for the next year. Currently XZ-26, one of the material components, is being purchased for \$36.45 per unit. It is expected that the component's cost will increase by approximately 10% next year and the price could range from \$38.75 to \$44.18 per unit depending on the quantity purchased. The appropriate standard for XZ-26 for next year should be set at the

- a. current actual cost plus the forecasted 10% price increase.
- b. lowest purchase price in the anticipated range to keep pressure on purchasing to always buy in the lowest price range.
- c. highest price in the anticipated range to insure that there are only favorable purchase price variances.
- d. price agreed upon by the purchasing manager and the appropriate level of company management.

43. CSO: 1B2d LOS: 1B2m

Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?

- a. Company A does not differentiate between variable and fixed overhead in calculating its overhead variances.
- b. Company B uses the prior year's average actual cost as the current year's standard.
- c. Company C investigates only negative variances.
- d. Company D constantly revises standards to reflect learning curves.

44. CSO: 1B2d LOS: 1B2m

After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be **inconsistent** with the consultant's conclusion?

- a. A review of performance reports revealed the presence of many unfavorable efficiency variances.
- b. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
- c. Management noted that minimal incentive bonuses have been paid in recent periods.
- d. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases on output being followed by rapid, sustained declines.

45. CSO: 1B3a LOS: 1B3a

For cost estimation simple regression differs from multiple regression in that simple regression uses only

- a. one dependent variable, while multiple regression uses all available data to estimate the cost function.
- b. dependent variables, while multiple regression can use both dependent and independent variables.
- c. one independent variable, while multiple regression uses more than one independent variable.
- d. one dependent variable, while multiple regression uses more than one dependent variable.

46. CSO: 1B3a LOS: 1B3a

A company has accumulated data for the last 24 months in order to determine if there is an independent variable that could be used to estimate shipping costs. Three possible independent variables being considered are packages shipped, miles shipped, and pounds shipped. The quantitative technique that should be used to determine whether any of these independent variables might provide a good estimate for shipping costs is

- a. flexible budgeting.
- b. linear programming.
- c. linear regression.
- d. variable costing.

47. CSO: 1B3a LOS: 1B3b

Dawson Manufacturing developed the following multiple regression equation, utilizing many years of data, and uses it to model, or estimate, the cost of its product.

$$\text{Cost} = \text{FC} + a*L + b*M$$

Where: FC = fixed costs

L = labor rate per hour

M = material cost per pound

Which one of the following changes would have the **greatest** impact on invalidating the results of this model?

- a. A significant reduction in factory overheads, which are a component of fixed costs.
- b. Renegotiation of the union contract calling for much higher wage rates.
- c. A large drop in material costs, as a result of purchasing the material from a foreign source.
- d. A significant change in labor productivity.

48. CSO: 1B3a LOS: 1B3c

In order to analyze sales as a function of advertising expenses, the sales manager of Smith Company developed a simple regression model. The model included the following equation, which was based on 32 monthly observations of sales and advertising expenses with a related coefficient of determination of .90.

$$S = \$10,000 + \$2.50A$$

S = sales

A = advertising expenses

If Smith Company's advertising expenses in one month amounted to \$1,000, the related point estimate of sales would be

- a. \$2,500.
- b. \$11,250.
- c. \$12,250.
- d. \$12,500.

49. CSO: 1B3a LOS: 1B3c

The results of regressing Y against X are as follows.

	<u>Coefficient</u>
Intercept	5.23
Slope	1.54

When the value of X is 10, the estimated value of Y is

- a. 6.78.
  - b. 8.05.
  - c. 20.63.
  - d. 53.84.
50. CSO: 1B3b LOS: 1B3d
- Which one of the following techniques would **most** likely be used to analyze reductions in the time required to perform a task as experience with that task increases?

- a. Regression analysis.
- b. Learning curve analysis.
- c. Sensitivity analysis.
- d. Normal probability analysis.

51. CSO: 1B3b LOS: 1B3e

Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used and eight units are produced, the cumulative average direct labor hours required per unit of the product will be

- a. 5,120 hours.
- b. 6,400 hours.
- c. 8,000 hours.
- d. 10,000 hours.

52. CSO: 1B3b LOS: 1B3d

A manufacturing firm plans to bid on a special order of 80 units that will be manufactured in lots of 10 units each. The production manager estimates that the direct labor hours per unit will decline by a constant percentage each time the cumulative quantity of units produced doubles. The quantitative technique used to capture this phenomenon and estimate the direct labor hours required for the special order is

- a. cost-profit-volume analysis.
- b. the Markov process.
- c. linear programming analysis.
- d. learning curve analysis.

53. *CSO: 1B3b LOS: 1B3e*

A manufacturing company has the opportunity to submit a bid for 20 units of a product on which it has already produced two 10-unit lots. The production manager believes that the learning experience observed on the first two lots will continue for at least the next two lots. The direct labor required on the first two lots was as follows.

- 5,000 direct labor hours for the first lot of 10 units
- 3,000 additional direct labor hours for the second lot of 10 units

The learning rate experienced by the company on the first two lots of this product is

- 40.0%.
- 60.0%.
- 62.5%.
- 80.0%.

54. *CSO: 1B3b LOS: 1B3e*

Aerosub Inc. has developed a new product for spacecraft that includes the manufacture of a complex part. The manufacturing of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. If an 80% learning curve is used, the cumulative direct labor hours required for producing a total of eight units would be

- 29,520 hours.
- 40,960 hours.
- 64,000 hours.
- 80,000 hours.

55. CSO: 1B3b LOS: 1B3e1B3b

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

If Propeller manufactures eight propellers, the total manufacturing cost would be

- a. \$50,660.
- b. \$54,880.
- c. \$62,643.
- d. \$112,000.

56. CSO: 1B3b LOS: 1B3e

Martin Fabricating uses a cumulative average-time learning curve model to monitor labor costs. Data regarding two recently completed batches of a part that is used in tractor-trailer rigs is as follows.

<u>Batch Number</u>	<u>Number of Units</u>	<u>Cumulative Average Hours Per Unit</u>
1	50	20
2	50	16

If the same rate of learning continues for the next several batches produced, which of the following best describes (1) the type (i.e., degree) of learning curve that the firm is experiencing and (2) the average hours per unit for units included in the 201-400 range of units produced (i.e., the last 200 units)?

	<u>Type (Degree) of Learning Curve</u>	<u>Average Hours Per Unit for Units 201-400</u>
a.	20%	10.24.
b.	80%	10.24.
c.	80%	7.68.
d.	20%	3.84.

57. CSO: 1B3b LOS: 1B3e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

If Propeller produces eight units, the average manufacturing cost per unit will be

- a. \$1,647.
- b. \$6,860.
- c. \$9,800.
- d. \$14,000.

58. CSO: 1B3b LOS: 1B3e

In competing as a subcontractor on a military contract, Aerosub Inc. has developed a new product for spacecraft that includes the manufacturing of a complex part. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. Accordingly, management estimates an 80% learning curve would apply to this unit. The overall contract will call for supplying eight units. Production of the first unit requires 10,000 direct labor hours. The estimated total direct labor hours required to produce the seven additional units would be

- a. 30,960 hours.
- b. 40,960 hours.
- c. 56,000 hours.
- d. 70,000 hours.

59. CSO: 1B3b LOS: 1B3e

A manufacturing company required 800 direct labor hours to produce the first lot of four units of a new motor. Management believes that a 90% learning curve will be experienced over the next four lots of production. How many direct labor hours will be required to manufacture the **next** 12 units?

- a. 1,792.
- b. 1,944.
- c. 2,016.
- d. 2,160.

60. CSO: 1B3b LOS: 1B3e

Propeller Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Propeller estimates a 70% cumulative learning curve and has projected the following costs.

<u>Cumulative number of units produced</u>	<u>Manufacturing Projections</u>	
	<u>Average cost per unit</u>	<u>Total costs</u>
1	\$20,000	\$20,000
2	14,000	28,000

The estimated cost of an order for seven additional propellers, after completing production of the first propeller, would be

- a. \$34,880.
- b. \$54,880.
- c. \$92,000.
- d. \$98,000.

61. CSO: 1B3c LOS: 1B3g

Johnson Software has developed a new software package. Johnson's sales manager has prepared the following probability distribution describing the relative likelihood of monthly sales levels and relative income (loss) for the company's new software package.

<u>Monthly Sales</u>		
<u>In Units</u>	<u>Probability</u>	<u>Income (Loss)</u>
10,000	.2	\$(4,000)
20,000	.3	10,000
30,000	.3	30,000
40,000	.2	60,000

If Johnson decides to market its new software package, the expected value of additional monthly income will be

- a. \$23,200.
- b. \$24,000.
- c. \$24,800.
- d. \$25,000.1B4a



62. CSO: 1B3c LOS: 1B3g

According to recent focus sessions, Norton Corporation has a “can’t miss” consumer product on its hands. Sales forecasts indicate either excellent or good results, with Norton’s sales manager assigning a probability of .6 to a good results outcome. The company is now studying various sales compensation plans for the product and has determined the following contribution margin data.

	<u>Contribution Margin</u>
If sales are excellent and	
Plan 1 is adopted	\$300,000
Plan 2 is adopted	370,000
If sales are good and	
Plan 1 is adopted	240,000
Plan 2 is adopted	180,000

On the basis of this information, which of the following statements is **correct**?

- a. Plan 2 should be adopted because it is \$10,000 more attractive than Plan 1.
- b. Plan 1 should be adopted because it is \$8,000 more attractive than Plan 2.
- c. Plan 1 should be adopted because of the sales manager’s higher confidence in good results.
- d. Either Plan should be adopted, the decision being dependent on the probability of excellent sales results.

63. CSO: 1B3c LOS: 1B3g

Denton Inc. manufactures industrial machinery and requires 100,000 switches per year in its assembly process. When switches are received from a vendor they are installed in the specific machine and tested. If the switches fail, they are scrapped and the associated labor cost of \$25 is considered lost productivity. Denton purchases “off the shelf” switches as opposed to custom-made switches and experiences quality problems with some vendors’ products. A decision must be made as to which vendor to buy from during the next year based on the following information.

<u>Vendor</u>	<u>Price per switch</u>	<u>Percentage expected to pass the test</u>
P	\$35	90%
Q	37	94%
R	39	97%
S	40	99%

Which vendor should Denton’s controller recommend to management?

- a. Vendor P.
- b. Vendor Q.
- c. Vendor R.
- d. Vendor S.

64. CSO: 1B3c LOS: 1B3g

Scarf Corporation's controller has decided to use a decision model to cope with uncertainty. With a particular proposal, currently under consideration, Scarf has two possible actions, invest or not invest in a joint venture with an international firm. The controller has determined the following.

Action 1: Invest in the Joint Venture

Events and Probabilities:

Probability of success = 60%.

Cost of investment = \$9.5 million.

Cash flow if investment is successful = \$15.0 million.

Cash flow if investment is unsuccessful = \$2.0 million.

Additional costs to be paid = \$0

Costs incurred up to this point = \$650,000.

Action 2: Do Not Invest in the Joint Venture

Events

Costs incurred up to this point = \$650,000.

Additional costs to be paid = \$100,000.

Which one of the following alternatives correctly reflects the respective expected values of investing versus not investing?

- a. \$300,000 and \$(750,000).
- b. \$(350,000) and \$(100,000).
- c. \$300,000 and (100,000).
- d. \$(350,000) and \$(750,000).

65. CSO: 1B3c LOS: 1B3g

Allbee Company has three possible investment opportunities. The controller calculated the payoffs and probabilities, as follows.

<u>Payoffs</u>	<u>Probabilities</u>		
	<u>Investment A</u>	<u>Investment B</u>	<u>Investment C</u>
\$(20,000)	.3	.2	.3
(10,000)	.1	.2	.1
30,000	.3	.2	.2
70,000	.2	.2	.3
100,000	.1	.2	.1

The cost of investments A, B, and C are the same. Using the expected-value criterion, which one of the following rankings of these investments, from highest payoff to lowest payoff, is correct?

- a. A, B, C.
- b. B, A, C.
- c. C, A, B.
- d. B, C, A.

66. CSO: 1B3c LOS: 1B3g

The sales manager of Serito Doll Company has suggested that an expanded advertising campaign costing \$40,000 would increase the sales and profits of the company. He has developed the following probability distribution for the effect of the advertising campaign on company sales.

<u>Sales increase</u> <u>(units)</u>	<u>Probability</u>
15,000	.10
30,000	.35
45,000	.10
60,000	.25
75,000	.20

The company sells the dolls at \$5.20 each. The cost of each doll is \$3.20. Serito's expected incremental profit, if the advertising campaign is adopted, would be

- a. \$6,500.
- b. \$46,500.
- c. \$53,000.
- d. \$93,000.

67. CSO: 1B3c LOS: 1B3g

Stock X has the following probability distribution of expected future returns.

<u>Probability</u>	<u>Expected</u> <u>Return</u>
.10	-20%
.20	5%
.40	15%
.20	20%
.10	30%

The expected rate of return on stock X would be

- a. 10%.
- b. 12%.
- c. 16%.
- d. 19%.

68. CSO: 1B3c LOS: 1B3g

Which one of the following four probability distributions provides the highest expected monetary value?

<u>Alternative #1</u>		<u>Alternative #2</u>		<u>Alternative #3</u>		<u>Alternative #4</u>	
Cash		Cash		Cash		Cash	
<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>	<u>Prob.</u>	<u>Inflows</u>
10%	\$50,000	10%	\$50,000	10%	\$50,000	10%	\$150,000
20%	75,000	20%	75,000	20%	75,000	20%	100,000
40%	100,000	45%	100,000	40%	100,000	40%	75,000
30%	150,000	25%	150,000	30%	125,000	30%	50,000

- a. Alternative #1.
- b. Alternative #2.
- c. Alternative #3.
- d. Alternative #4.

69. CSO: 1B3c LOS: 1B3g

The Lions Club is planning to sell pretzels at a local football game and has estimated sales demand as follows.

Sales demand	8,000	10,000	12,000	15,000
Probability	10%	40%	30%	20%

The cost of the pretzels varies with the quantity purchased as follows.

Purchase quantity	8,000	10,000	12,000	15,000
Cost per unit	\$1.25	\$1.20	\$1.15	\$1.10

Any unsold pretzels would be donated to the local food bank. The calculated profits at the various sales demand levels and purchase quantities are as follows.

<u>Sales Demand</u>	<u>Expected Profits at Various Purchase Quantity Levels</u>			
	<u>8,000</u>	<u>10,000</u>	<u>12,000</u>	<u>15,000</u>
8,000	\$6,000	\$4,000	\$ 2,200	\$ (500)
10,000	6,000	8,000	6,200	3,500
12,000	6,000	8,000	10,200	7,500
15,000	6,000	8,000	10,200	13,500

Which one of the following purchase quantities would you recommend to the Lions Club?

- a. 8,000.
- b. 10,000.
- c. 12,000.
- d. 15,000.

70. *CSO: 1B4a LOS: 1B4d*  
All of the following are criticisms of the traditional budgeting process **except** that it
- makes across-the-board cuts when early budget iterations show that planned expenses are too high.
  - incorporates non-financial measures as well as financial measures into its output.
  - overemphasizes a fixed time horizon such as one year.
  - is not used until the end of the budget period to evaluate performance.

71. *CSO: 1B4a LOS: 1B4b*  
Many companies use comprehensive budgeting in planning for the next year's activities. When both an operating budget and a financial budget are prepared, which one of the following is **correct** concerning the financial budget?

Included in the Financial Budget			
	<u>Capital Budget</u>	<u>Pro-forma Balance Sheet</u>	<u>Cash Budget</u>
a.	Yes	No	Yes.
b.	No	Yes	No.
c.	Yes	Yes	Yes.
d.	No	No	No.

72. *CSO: 1B4a LOS: 1B4b*  
What would be the correct chronological order of preparation for the following budgets?

- Cost of goods sold budget.
- Production budget.
- Purchases budget.
- Administrative budget.

- I, II, III, IV.
  - III, II, IV, I.
  - IV, II, III, I.
  - II, III, I, IV.
73. *CSO: 1B4a LOS: 1B4c*  
Which one of the following **best** describes the order in which budgets should be prepared when developing the annual master operating budget?
- Production budget, direct material budget, revenue budget.
  - Production budget, revenue budget, direct material budget.
  - Revenue budget, production budget, direct material budget.
  - Revenue budget, direct material budget, production budget.

74. CSO: 1B4d LOS: 1B4a

A budgeting approach that requires a manager to justify the entire budget for each budget period is known as

- a. performance budgeting.
- b. program budgeting.
- c. zero-base budgeting.
- d. incremental budgeting.

75. CSO: 1B4f LOS: 1B4d

Rainbow Inc. recently appointed Margaret Joyce as vice president of finance and asked her to design a new budgeting system. Joyce has changed to a monthly budgeting system by dividing the company's annual budget by twelve. Joyce then prepared monthly budgets for each department and asked the managers to submit monthly reports comparing actual to budget. A sample monthly report for Department A is shown below.

Rainbow Inc.  
Monthly Report for Department A

	<u>Actual</u>	<u>Budget</u>	<u>Variance</u>
<u>Units</u>	1,000	900	100F
Variable production costs			
Direct material	\$2,800	\$2,700	\$100U
Direct labor	4,800	4,500	300U
Variable factory overhead	4,250	4,050	200U
Fixed costs			
Depreciation	3,000	2,700	300U
Taxes	1,000	900	100U
Insurance	1,500	1,350	150U
Administration	1,100	990	110U
Marketing	<u>1,000</u>	<u>900</u>	<u>100U</u>
Total costs	<u>\$19,450</u>	<u>\$18,090</u>	<u>\$1,360U</u>

This monthly budget has been imposed from the top and will create behavior problems. All of the following are causes of such problems **except**

- a. the use of a flexible budget rather than a fixed budget.
- b. top management authoritarian attitude toward the budget process.
- c. the inclusion of non-controllable costs such as depreciation.
- d. the lack of consideration for factors such as seasonality.

76. CSO: 1B4f LOS: 1B4d

When compared to static budgets, flexible budgets

- a. offer managers a more realistic comparison of budget and actual fixed cost items under their control.
- b. provide a better understanding of the capacity variances during the period being evaluated.
- c. encourage managers to use less fixed costs items and more variable cost items that are under their control.
- d. offer managers a more realistic comparison of budget and actual revenue and cost items under their control.

77. CSO: 1B4f LOS: 1B4a

Country Ovens is a family restaurant chain. Due to an unexpected road construction project, traffic passing by the Country Ovens restaurant in Newtown has significantly increased. As a result, restaurant volume has similarly increased well beyond the level expected. Which type of budget would be **most** appropriate in helping the restaurant manager plan for restaurant labor costs?

- a. Zero-based budget.
- b. Rolling budget.
- c. Activity-based budget.
- d. Flexible budget.

78. CSO: 1B5a LOS: 1B5c

Netco's sales budget for the coming year is as follows.

<u>Item</u>	<u>Volume in Units</u>	<u>Sales Price</u>	<u>Sales Revenue</u>
1	200,000	\$50	\$10,000,000
2	150,000	10	1,500,000
3	300,000	30	<u>9,000,000</u>
Total sales revenue			<u>\$20,500,000</u>

Items 1 and 3 are different models of the same product. Item 2 is a complement to Item 1. Past experience indicates that the sales volume of Item 2 relative to the sales volume of Item 1 is fairly constant. Netco is considering an 10% price increase for the coming year for Item 1, which will cause sales of Item 1 to decline by 20%, while simultaneously causing sales of Item 3 to increase by 5%. If Netco institutes the price increase for Item 1, total sales revenue will decrease by

- a. \$1,050,000.
- b. \$850,000.
- c. \$750,000.
- d. \$550,000.

79. *CSO: 1B5a LOS: 1B5i*

Hannon Retailing Company prices its products by adding 30% to its cost. Hannon anticipates sales of \$715,000 in July, \$728,000 in August, and \$624,000 in September. Hannon's policy is to have on hand enough inventory at the end of the month to cover 25% of the next month's sales. What will be the cost of the inventory that Hannon should budget for purchase in August?

- a. \$509,600.
- b. \$540,000.
- c. \$560,000.
- d. \$680,000.

80. *CSO: 1B5a LOS: 1B5f*

Streeter Company produces plastic microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. How many units should Streeter produce in the second quarter?

- a. 72,000 units.
- b. 75,000 units.
- c. 78,000 units.
- d. 84,000 units.

81. *CSO: 1B5a LOS: 1B5f*

Ming Company has budgeted sales at 6,300 units for the next fiscal year, and desires to have 590 good units on hand at the end of that year. Beginning inventory is 470 units. Ming has found from past experience that 10% of all units produced do not pass final inspection, and must therefore be destroyed. How many units should Ming plan to produce in the next fiscal year?

- a. 6,890.
- b. 7,062.
- c. 7,133.
- d. 7,186.

82. *CSO: 1B5a LOS: 1B5f*

Savior Corporation assembles backup systems for home computers. For the first quarter, the budget for sales is 67,500 units. Savior will finish the fourth quarter of last year with an inventory of 3,500 units, of which 200 are obsolete. The target ending inventory is 10 days of sales (based upon 360 days). What is the budgeted production for the first quarter?

- a. 75,000.
- b. 71,700.
- c. 71,500.
- d. 64,350



83. CSO: 1B5a LOS: 1B5f

Streeter Company produces microwave turntables. Sales for the next year are expected to be 65,000 units in the first quarter, 72,000 units in the second quarter, 84,000 units in the third quarter, and 66,000 units in the fourth quarter. Streeter usually maintains a finished goods inventory at the end of each quarter equal to one half of the units expected to be sold in the next quarter. However, due to a work stoppage, the finished goods inventory at the end of the first quarter is 8,000 units less than it should be. How many units should Streeter produce in the second quarter?

- a. 75,000 units.
- b. 78,000 units.
- c. 80,000 units.
- d. 86,000 units.

84. CSO: 1B5a LOS: 1B5f

Data regarding Rombus Company's budget are shown below.

Planned sales	4,000 units
Material cost	\$2.50 per pound
Direct labor	3 hours per unit
Direct labor rate	\$7 per hour
Finished goods beginning inventory	900 units
Finished goods ending inventory	600 units
Direct materials beginning inventory	4,300 units
Direct materials ending inventory	4,500 units
Materials used per unit	6 pounds

Rombus Company's production budget will show total units to be produced of

- a. 3,700.
- b. 4,000.
- c. 4,300.
- d. 4,600.

85. CSO: 1B5a LOS: 1B5f

Krouse Company is in the process of developing its operating budget for the coming year. Given below are selected data regarding the company's two products, laminated putter heads and forged putter heads, which are sold through specialty golf shops.

	Putter Heads	
	Forged	Laminated
Raw materials		
Steel	2 pounds @ \$5/lb.	1 pound @ \$5/lb.
Copper	None	1 pound @ \$15/lb.
Direct labor	1/4 hour @ \$20/hr.	1 hour @ \$22/hr.
Expected sales (units)	8,200	2,000
Selling price per unit	\$30	\$80
Ending inventory target (units)	100	60
Beginning inventory (units)	300	60
Beginning inventory (cost)	\$5,250	\$3,120

Manufacturing overhead is applied to units produced on the basis of direct labor hours. Variable manufacturing overhead is projected to be \$25,000, and fixed manufacturing overhead is expected to be \$15,000.

The estimated cost to produce one unit of the laminated putter head is

- \$42.
- \$46.
- \$52.
- \$62.

86. CSO: 1B5a LOS: 1B5d

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A partial schedule of cash collections for January through March of the coming year reveals the following receipts for the period.

	<u>Cash Receipts</u>		
	<u>January</u>	<u>February</u>	<u>March</u>
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000

Other information includes the following.

- Inventories are maintained at 30% of the following month's sales.
- Assume that March sales total \$150,000.

The number of units to be purchased in February is

- 3,850 units.
- 4,900 units.
- 6,100 units.
- 7,750 units.

87. CSO: 1B5a LOS: 1B5i

Stevens Company manufactures electronic components used in automobile manufacturing. Each component uses two raw materials, Geo and Clio. Standard usage of the two materials required to produce one finished electronic component, as well as the current inventory, are shown below.

<u>Material</u>	<u>Standard</u>	<u>Price</u>	<u>Current Inventory</u>
	<u>Per Unit</u>		
Geo	2.0 pounds	\$15/lb.	5,000 pounds
Clio	1.5 pounds	\$10/lb.	7,500 pounds

Stevens forecasts sales of 20,000 components for each of the next two production periods. Company policy dictates that 25% of the raw materials needed to produce the next period's projected sales be maintained in ending direct materials inventory.

Based on this information, the budgeted direct material purchases for the coming period would be

	<u>Geo</u>	<u>Clio</u>
a.	\$450,000	\$450,000.
b.	\$675,000	\$300,000.
c.	\$675,000	\$400,000.
d.	\$825,000	\$450,000.

88. CSO: 1B5a LOS: 1B5i

Petersons Planters Inc. budgeted the following amounts for the coming year.

Beginning inventory, finished goods	\$ 10,000
Cost of goods sold	400,000
Direct material used in production	100,000
Ending inventory, finished goods	25,000
Beginning and ending work-in-process inventory	Zero

Overhead is estimated to be two times the amount of direct labor dollars. The amount that should be budgeted for direct labor for the coming year is

- a. \$315,000.
- b. \$210,000.
- c. \$157,500.
- d. \$105,000.

89. CSO: 1B5a LOS: 1B5i

Over the past several years, McFadden Industries has experienced the following regarding the company's shipping expenses.

Fixed costs	\$16,000
Average shipment	15 pounds
Cost per pound	\$.50

Shown below are McFadden's budget data for the coming year.

Number of units shipped	8,000
Number of sales orders	800
Number of shipments	800
Total sales	\$1,200,000
Total pounds shipped	9,600

McFadden's expected shipping costs for the coming year are

- a. \$4,800.
- b. \$16,000.
- c. \$20,000.
- d. \$20,800.

90. CSO: 1B5a LOS: 1B5g

Swan Company is a maker of men's slacks. The company would like to maintain 20,000 yards of fabric in ending inventory. The beginning fabric inventory is expected to contain 25,000 yards. The expected yards of fabric needed for sales is 90,000. Compute the yards of fabric that Swan needs to purchase.

- a. 85,000.
- b. 90,000.
- c. 95,000.
- d. 135,000.

91. CSO: 1B5a LOS: 1B5g

Manoli Gift Shop maintains a 35% gross profit margin percentage, and carries an ending inventory balance each month sufficient to support 30% of the next month's expected sales. Anticipated sales for the fourth quarter are as follows.

October	\$42,000
November	58,000
December	74,000

What amount of goods should Manoli Gift Shop plan to purchase during the month of November?

- a. \$40,820.
- b. \$51,220.
- c. \$52,130.
- d. \$62,800.

92. CSO: 1B5a LOS: 1B5g

In preparing the direct material purchases budget for next quarter, the plant controller has the following information available.

Budgeted unit sales	2,000
Pounds of materials per unit	4
Cost of materials per pound	\$3
Pounds of materials on hand	400
Finished units on hand	250
Target ending units inventory	325
Target ending inventory of pounds of materials	800

How many pounds of materials must be purchased?

- a. 2,475.
- b. 7,900.
- c. 8,700.
- d. 9,300.

93. *CSO: 1B5a LOS: 1B5g*  
 Playtime Toys estimates that it will sell 200,000 dolls during the coming year. The beginning inventory is 12,000 dolls; the target ending inventory is 15,000 dolls. Each doll requires two shoes which are purchased from an outside supplier. The beginning inventory of shoes is 20,000; the target ending inventory is 18,000 shoes. The number of shoes that should be purchased during the year is
- 396,000 shoes.
  - 398,000 shoes.
  - 402,000 shoes.
  - 404,000 shoes.
94. *CSO: 1B5a LOS: 1B5g*  
 Maker Distributors has a policy of maintaining inventory at 15% of the next month's forecasted sales. The cost of Maker's merchandise averages 60% of the selling price. The inventory balance as of May 31 is \$63,000, and the forecasted dollar sales for the last seven months of the year are as follows.
- |           |           |
|-----------|-----------|
| June      | \$700,000 |
| July      | 600,000   |
| August    | 650,000   |
| September | 800,000   |
| October   | 850,000   |
| November  | 900,000   |
| December  | 840,000   |
- What is the budgeted dollar amount of Maker's purchases for July?
- \$355,500.
  - \$360,000.
  - \$364,500.
  - \$399,000.
95. *CSO: 1B5a LOS: 1B5m*  
 All of the following would appear on a projected schedule of cost of goods manufactured **except** for
- ending work-in-process inventory.
  - beginning finished goods inventory.
  - the cost of raw materials used.
  - applied manufacturing overhead.

96. CSO: 1B5a LOS: 1B5j

A company that manufactures furniture is establishing its budget for the upcoming year. All of the following items would appear in its overhead budget **except** for the

- a. overtime paid to the workers who perform production scheduling.
- b. cost of glue used to secure the attachment of the legs to the tables.
- c. fringe benefits paid to the production supervisor.
- d. freight charges paid for the delivery of raw materials to the company.

97. CSO: 1B5a LOS: 1B5l

Using the following budget data for Valley Corporation, which produces only one product, calculate the company's predetermined factory overhead application rate for variable overhead.

Units to be produced	11,000
Units to be sold	10,000
Indirect materials, varying with production	\$ 1,000
Indirect labor, varying with production	10,000
Factory supervisor's salary, incurred regardless of production	20,000
Depreciation on factory building and equipment	30,000
Utilities to operate factory machines	12,000
Security lighting for factory	2,000
Selling, general and administrative expenses	5,000

- a. \$2.09.
- b. \$2.30.
- c. \$4.73.
- d. \$5.20.

98. CSO: 1B5a LOS: 1B5m

Given the following data for Scurry Company, what is the cost of goods sold?

Beginning inventory of finished goods	\$100,000
Cost of goods manufactured	700,000
Ending inventory of finished goods	200,000
Beginning work-in-process inventory	300,000
Ending work-in-process inventory	50,000

- a. \$500,000.
- b. \$600,000.
- c. \$800,000.
- d. \$950,000.

99. CSO: 1B5a LOS: 1B5o1B5b

Tut Company's selling and administrative costs for the month of August, when it sold 20,000 units, were as follows.

	Costs	
	<u>Per Unit</u>	<u>Total</u>
Variable costs	\$18.60	\$372,000
Step costs	4.25	85,000
Fixed costs	<u>8.80</u>	<u>176,000</u>
Total selling and administrative costs	<u>\$31.65</u>	<u>\$633,000</u>

The variable costs represent sales commissions paid at the rate of 6.2% of sales. The step costs depend on the number of salespersons employed by the company. In August there were 17 persons on the sales force. However, two members have taken early retirement effective August 31. It is anticipated that these positions will remain vacant for several months. Total fixed costs are unchanged within a relevant range of 15,000 to 30,000 units per month. Tut is planning a sales price cut of 10%, which it expects will increase sales volume to 24,000 units per month. If Tut implements the sales price reduction, the total budgeted selling and administrative costs for the month of September would be

- a. \$652,760.
- b. \$679,760.
- c. \$714,960.
- d. \$759,600.

100. CSO: 1B5b LOS: 1B5u

Granite Company sells products exclusively on account, and has experienced the following collection pattern: 60% in the month of sale, 25% in the month after sale, and 15% in the second month after sale. Uncollectible accounts are negligible. Customers who pay in the month of sale are given a 2% discount. If sales are \$220,000 in January, \$200,000 in February, \$280,000 in March, and \$260,000 in April, Granite's accounts receivable balance on May 1 will be

- a. \$107,120.
- b. \$143,920.
- c. \$146,000.
- d. \$204,000.



101. CSO: 1B5b LOS: 1B5t

Myers Company uses a calendar-year and prepares a cash budget for each month of the year. Which one of the following items should be considered when developing July's cash budget?

- a. Federal income tax and social security tax withheld from employee's June paychecks to be remitted to the Internal Revenue Service in July.
- b. Quarterly cash dividends scheduled to be declared on July 15 and paid on August 6 to shareholders of record as of July 25.
- c. Property taxes levied in the last calendar year scheduled to be paid quarterly in the coming year during the last month of each calendar quarter.
- d. Recognition that 0.5% of the July sales on account will be uncollectible.

102. CSO: 1B5b LOS: 1B5t

Brown Company estimates that monthly sales will be as follows.

January	\$100,000
February	150,000
March	180,000

Historical trends indicate that 40% of sales are collected during the month of sale, 50% are collected in the month following the sale, and 10% are collected two months after the sale. Brown's accounts receivable balance as of December 31 totals \$80,000 (\$72,000 from December's sales and \$8,000 from November's sales). The amount of cash Brown can expect to collect during the month of January is

- a. \$76,800.
- b. \$84,000.
- c. \$108,000.
- d. \$133,000.

103. CSO: 1B5b LOS: 1B5u

Cooper Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review.

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase, and the other 50% in the following month. All payments for other expenses are made in the month incurred.

Cooper forecasts the following account balances at the beginning of the quarter.

Cash	\$100,000
Accounts receivable	300,000
Accounts payable (Inventory)	500,000

Given the above information, the projected change in cash during the coming quarter will be

- \$412,500.
- \$300,000.
- \$112,500.
- \$ -0-.

104. CSO: 1B5b LOS: 1B5u

Bootstrap Corporation anticipates the following sales during the last six months of the year.

July	\$460,000
August	500,000
September	525,000
October	500,000
November	480,000
December	450,000

20% of Bootstrap's sales are for cash. The balance is subject to the collection pattern shown below.

Percentage of balance collected in the month of sale	40%
Percentage of balance collected in the month following sale	30%
Percentage of balance collected in the second month following sale	25%
Percentage of balance uncollectible	5%

What is the planned net accounts receivable balance as of December 31?

- a. \$279,300.
- b. \$294,000.
- c. \$360,000.
- d. \$367,500.

105. CSO: 1B5b LOS: 1B5u

Projected monthly sales of Wallstead Corporation for January, February, March, and April are as follows.

January	\$300,000
February	340,000
March	370,000
April	390,000

- The company bills each month's sales on the last day of the month.
- Receivables are booked gross and credit terms of sale are: 2/10, n/30.
- 50% of the billings are collected within the discount period, 30% are collected by the end of the month, 15% are collected by the end of the second month, and 5% become uncollectible.

Budgeted cash collections for Wallstead Company during April would be

- a. \$343,300.
- b. \$347,000.
- c. \$349,300.
- d. \$353,000.

106. CSO: 1B5b LOS: 1B5u

Tip-Top Cleaning Supply carries a large number of different items in its inventory, giving the firm a competitive advantage in its industry. Below is part of Tip-Top's budget for the first quarter of next year.

Sales	\$855,000
Cost of goods sold	425,000
Rent and salary expenses	375,000

Historically, all of the sales are on account and are made evenly over the quarter. 5% of all sales are determined to be uncollectible and written off. The balance of the receivables is collected in 50 days. This sales and collection experience is expected to continue in the first quarter. The projected balance sheet for the first day of the quarter includes the following account balances.

Cash	\$ 10,000
Accounts receivable (net)	450,000
Inventory	900,000
Accounts payable	800,000

How much cash can Tip-Top anticipate collecting in the first quarter (based on a 360-day year)?

- \$811,000.
- \$830,000.
- \$901,250.
- \$902,500.

107. CSO: 1B5b LOS: 1B5u

Monroe Products is preparing a cash forecast based on the following information.

- Monthly sales: December \$200,000; January \$200,000; February \$350,000; March \$400,000.
- All sales are on credit and collected the month following the sale.
- Purchases are 60% of next month's sales and are paid for in the month of purchase.
- Other monthly expenses are \$25,000, including \$5,000 of depreciation.

If the January beginning cash balance is \$30,000, and Monroe is required to maintain a minimum cash balance of \$10,000, how much short-term borrowing will be required at the end of February?

- \$60,000.
- \$70,000.
- \$75,000.
- \$80,000.

108. CSO: 1B5b LOS: 1B5u

Prudent Corporation's budget for the upcoming accounting period reveals total sales of \$700,000 in April and \$750,000 in May. The sales cash collection pattern is

20% of each month's sales are cash sales.

5% of a month's credit sales are uncollectible.

70% of a month's credit sales are collected in the month of sale.

25% of a month's credit sales are collected in the month following the sale.

If Prudent anticipates the cash sale of a piece of old equipment in May for \$25,000, May's total budgeted cash receipts would be

- a. \$560,000.
- b. \$702,500.
- c. \$735,000.
- d. \$737,500.

109. CSO: 1B5b LOS: 1B5u

ANNCO sells products on account, and experiences the following collection schedule.

In the month of sale	10%
In the month after sale	60%
In the second month after sale	30%

At December 31, ANNCO reports accounts receivable of \$211,500. Of that amount, \$162,000 is due from December sales, and \$49,500 from November sales. ANNCO is budgeting \$170,000 of sales for January. If so, what amount of cash should be collected in January?

- a. \$129,050.
- b. \$174,500.
- c. \$211,500.
- d. \$228,500.

110. CSO: 1B5b LOS: 1B5u

Brooke Company's management team is preparing a cash budget for the coming quarter. The following budgeted information is under review.

	<u>January</u>	<u>February</u>	<u>March</u>
Revenue	\$700,000	\$800,000	\$500,000
Inventory purchases	350,000	425,000	225,000
Other expenses	150,000	175,000	175,000

The company expects to collect 40% of its monthly sales in the month of sale and 60% in the following month. 50% of inventory purchases are paid in the month of purchase, and 50% in the following month. Payments for all other expenses are made in the month incurred.

Brooke forecasts the following account balances at the beginning of the quarter.

Cash	\$200,000
Accounts receivable	300,000
Accounts payable (Inventory)	400,000

Given the above information, the projected ending cash balance for February will be

- \$712,500.
- \$500,000.
- \$232,500.
- \$120,000.

111. *CSO: 1B5b LOS: 1B5u*

Health Foods Inc. has decided to start a cash budgeting program to improve overall cash management. Information gathered from the past year reveals the following cash collection trends.

- 40% of sales are on credit
- 50% of credit sales are collected in month of sale
- 30% of credit sales are collected first month after sale
- 15% of credit sales are collected second month after sale
- 5% of credit sales result in bad debts

Gross sales for the last five months were as follows.

January	\$220,000
February	240,000
March	250,000
April	230,000
May	260,000

Sales for June are projected to be \$255,000. Based on this information, the expected cash receipts for March would be

- a. \$230,000.
- b. \$237,400.
- c. \$242,000.
- d. \$243,200.

112. CSO: 1B5b LOS: 1B5u

Tidwell Corporation sells a single product for \$20 per unit. All sales are on account, with 60% collected in the month of sale and 40% collected in the following month. A schedule of cash collections for January through March of the coming year reveals the following receipts for the period.

	Cash Receipts		
	<u>January</u>	<u>February</u>	<u>March</u>
December receivables	\$32,000		
From January sales	54,000	\$36,000	
From February sales		66,000	\$44,000
From March sales			72,000

Other information includes the following.

- Inventories are maintained at 30% of the following month's sales.
- Tidwell desires to keep a minimum cash balance of \$15,000. Total payments in January are expected to be \$106,500, which excludes \$12,000 of depreciation expense. Any required borrowings are in multiples of \$1,000.
- The December 31 balance sheet for the preceding year revealed a cash balance of \$24,900.

Ignoring income taxes, the financing needed in January to maintain the firm's minimum cash balance is

- \$8,000.
- \$10,600.
- \$11,000.
- \$23,000.



113. CSO: 1B5b LOS: 1B5u

Data regarding Johnsen Inc.'s forecasted dollar sales for the last seven months of the year and Johnsen's projected collection patterns are as follows.

<u>Forecasted sales</u>	
June	\$700,000
July	600,000
August	650,000
September	800,000
October	850,000
November	900,000
December	840,000

<u>Types of sales</u>	
Cash sales	30%
Credit sales	70%

<u>Collection pattern on credit sales</u> (5% determined to be uncollectible)	
During the month of sale	20%
During the first month following the sale	50%
During the second month following the sale	25%

Johnsen's budgeted cash receipts from sales and collections on account for September are

- \$635,000.
- \$684,500.
- \$807,000.
- \$827,000.

114. CSO: 1B5b LOS: 1B5u

The Mountain Mule Glove Company is in its first year of business. Mountain Mule had a beginning cash balance of \$85,000 for the quarter. The company has a \$50,000 short-term line of credit. The budgeted information for the first quarter is shown below.

	<u>January</u>	<u>February</u>	<u>March</u>
Sales	\$60,000	\$40,000	\$50,000
Purchases	35,000	40,000	75,000
Operating costs	25,000	25,000	25,000

All sales are made on credit and are collected in the second month following the sale. Purchases are paid in the month following the purchase, while operating costs are paid in the month that they are incurred. How much will Mountain Mule need to borrow at the end of the quarter if the company needs to maintain a minimum cash balance of \$5,000 as required by a loan covenant agreement?

- \$0.
- \$5,000.
- \$10,000.
- \$45,000.

## Section C: Performance Management

115. CSO: 1C1a LOS: 1C1d

A major **disadvantage** of a static budget is that

- a. it is more difficult to develop than a flexible budget.
- b. it is made for only one level of activity.
- c. variances tend to be smaller than when flexible budgeting is used.
- d. variances are more difficult to compute than when flexible budgeting is used.

116. CSO: 1C1a LOS: 1C1d

Arkin Co.'s controller has prepared a flexible budget for the year just ended, adjusting the original static budget for the unexpected large increase in the volume of sales. Arkin's costs are mostly variable. The controller is pleased to note that both actual revenues and actual costs approximated amounts shown on the flexible budget. If actual revenues and actual costs are compared with amounts shown on the original (static) budget, what variances would arise?

- a. Both revenue variances and cost variances would be favorable.
- b. Revenue variances would be favorable and cost variances would be unfavorable.
- c. Revenue variances would be unfavorable and cost variances would be favorable.
- d. Both revenue variances and cost variances would be unfavorable.

117. CSO: 1C1b LOS: 1C1d

Use of a standard cost system can include all of the following advantages **except** that it

- a. assists in performance evaluation.
- b. emphasizes qualitative characteristics.
- c. permits development of flexible budgeting.
- d. allows employees to better understand what is expected of them.

118. CSO: 1C1b LOS: 1C1e

Which one of the following statements is **correct** concerning a flexible budget cost formula?  
Variable costs are stated

- a. per unit and fixed costs are stated in total.
- b. in total and fixed costs are stated per unit.
- c. in total and fixed costs are stated in total.
- d. per unit and fixed costs are stated per unit.

119. CSO: 1C1b LOS: 1C1e

The monthly sales volume of Shugart Corporation varies from 7,000 units to 9,800 units over the course of a year. Management is currently studying anticipated selling expenses along with the related cash resources that will be needed. Which of the following types of budgets (1) should be used by Shugart in planning, and (2) will provide Shugart the **best** feedback in performance reports for comparing planned expenditures with actual amounts?

	<u>Planning</u>	<u>Performance Reporting</u>
a.	Static	Static.
b.	Static	Flexible.
c.	Flexible	Static.
d.	Flexible	Flexible.

120. CSO: 1C1b LOS: 1C1f

The following performance report was prepared for Dale Manufacturing for the month of April.

	<u>Actual Results</u>	<u>Static Budget</u>	<u>Variance</u>
Sales units	<u>100,000</u>	<u>80,000</u>	<u>20,000F</u>
Sales dollars	\$190,000	\$160,000	\$30,000F
Variable costs	125,000	96,000	29,000U
Fixed costs	<u>45,000</u>	<u>40,000</u>	<u>5,000U</u>
Operating income	<u>\$ 20,000</u>	<u>\$ 24,000</u>	<u>\$ 4,000U</u>

Using a flexible budget, Dale's total sales-volume variance is

- a. \$4,000 unfavorable.
- b. \$6,000 favorable.
- c. \$16,000 favorable.
- d. \$20,000 unfavorable.

121. CSO: 1C1b LOS: 1C1h

Of the following pairs of variances found in a flexible budget report, which pair is **most likely** to be related?

- a. Material price variance and variable overhead efficiency variance.
- b. Labor rate variance and variable overhead efficiency variance.
- c. Material usage variance and labor efficiency variance.
- d. Labor efficiency variance and fixed overhead volume variance.

122. CSO: 1C1b LOS: 1C1e

An advantage of using a flexible budget compared to a static budget is that in a flexible budget

- a. shortfalls in planned production are clearly presented.
- b. standards can easily be changed to adjust to changing circumstances.
- c. fixed cost variances are more clearly presented.
- d. budgeted costs for a given output level can be compared with actual costs for the same level of output.

123. CSO: 1C1c LOS: 1C1i

The benefits of management by exception reporting include all of the following **except** a reduction in

- a. reports production costs.
- b. information overload.
- c. reliance on advance planning.
- d. unfocused management actions.

124. CSO: 1C1d LOS: 1C1j

Lee manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of June included 10,000 hours of direct labor at \$15 per hour, \$150,000. During June, 4,500 units were produced, using 9,600 direct labor hours, incurring \$39,360 of variable overhead, and showing a variable overhead efficiency variance of \$2,400 unfavorable. The standard variable overhead rate per direct labor hour was

- a. \$3.85.
- b. \$4.00.
- c. \$4.10.
- d. \$6.00.

125. CSO: 1C1d LOS: 1C1k

MinnOil performs oil changes and other minor maintenance services (e.g., tire pressure checks) for cars. The company advertises that all services are completed within 15 minutes for each service. On a recent Saturday, 160 cars were serviced resulting in the following labor variances: rate, \$19 unfavorable; efficiency, \$14 favorable. If MinnOil's standard labor rate is \$7 per hour, determine the actual wage rate per hour and the actual hours worked.

	<u>Wage Rate</u>	<u>Hours Worked</u>
a.	\$6.55	42.00.
b.	\$6.67	42.71.
c.	\$7.45	42.00.
d.	\$7.50	38.00.

126. CSO: 1C1e LOS: 1C1I

A company applies variable overhead based upon direct labor hours and has a variable overhead efficiency variance that is \$25,000 favorable. A possible cause of this variance is that

- a. higher skilled labor was used.
- b. electricity rates were lower than expected.
- c. less supplies were used than anticipated.
- d. less units of finished goods were produced.

127. CSO: 1C1e LOS: 1C1s

A company has a raw material price variance that is unfavorable. An analysis of this variance indicates that the company's only available supplier of one of its raw materials unexpectedly raised the price of the material. The action management should take regarding this situation should be to

- a. negatively evaluate the performance of the purchasing manager.
- b. negatively evaluate the performance of the production manager.
- c. change the raw material price standard.
- d. ask the production manager to lower the material usage standard to compensate for higher material costs.

128. CSO: 1C1e LOS: 1C1s

The following information is from the accounting records of St. Charles Enterprises.

	Static	
	<u>Budget</u>	<u>Actual</u>
Sales volume (units)	<u>82,000</u>	<u>75,000</u>
Selling price/unit	\$ 15.00	\$ 15.00
Variable cost/unit	9.00	9.25
Fixed cost	280,000	285,000

A staff assistant performed a comparison of budget and actual data, and calculated an unfavorable operating income variance of \$65,750. The assistant concluded that performance did not meet expectations because there was an unfavorable variance in operating income. Which one of the following is the **best** evaluation of this preliminary conclusion?

- a. Both the conclusion and the variance calculation are correct.
- b. The conclusion is incorrect, but the variance calculation is informative.
- c. The conclusion is correct, but the variance calculation could be more informative.
- d. Both the conclusion and the variance calculation are incorrect.

129. CSO: 1C1e LOS: 1C1s

For a given time period, a company had a favorable material quantity variance, a favorable direct labor efficiency variance, and a favorable fixed overhead volume variance. Of the following, the one factor that could **not** have caused all three variances is

- a. the purchase of higher quality materials.
- b. the use of lower-skilled workers.
- c. the purchase of more efficient machinery.
- d. an increase in production supervision.

130. CSO: 1C1e LOS: 1C1a

Marten Company has a cost-benefit policy to investigate any variance that is greater than \$1,000 or 10% of budget, whichever is larger. Actual results for the previous month indicate the following.

	<u>Budget</u>	<u>Actual</u>
Raw material	\$100,000	\$89,000
Direct labor	50,000	54,000

The company should investigate

- a. neither the material variance nor the labor variance.
- b. the material variance only.
- c. the labor variance only.
- d. both the material variance and the labor variance.

131. CSO: 1C1e LOS: 1B1s

A company has a direct labor price variance that is favorable. Of the following, the **most** serious concern the company may have about this variance is that

- a. the circumstances giving rise to the favorable variance will not continue in the future.
- b. the production manager may not be using human resources as efficiently as possible.
- c. the cause of the favorable variance may result in other larger unfavorable variances in the value-chain.
- d. actual production is less than budgeted production.

132. CSO: 1C1e LOS: 1C1k

Frisco Company recently purchased 108,000 units of raw material for \$583,200. Three units of raw materials are budgeted for use in each finished good manufactured, with the raw material standard set at \$16.50 for each completed product. Frisco manufactured 32,700 finished units during the period just ended and used 99,200 units of raw material. If management is concerned about the timely reporting of variances in an effort to improve cost control and bottom-line performance, the materials purchase price variance should be reported as

- a. \$6,050 unfavorable.
- b. \$9,920 favorable.
- c. \$10,800 unfavorable.
- d. \$10,800 favorable.

133. CSO: 1C1e LOS: 1C1k

Christopher Akers is the chief executive officer of SBL Inc., a masonry contractor. The financial statements have just arrived showing a \$3,000 loss on the new stadium job that was budgeted to show a \$6,000 profit. Actual and budget information relating to the materials for the job are as follows.

	<u>Actual</u>	<u>Budget</u>
Bricks - number of bundles	3,000	2,850
Bricks - cost per bundle	\$7.90	\$8.00

Which one of the following is a **correct** statement regarding the stadium job for SBL?

- a. The price variance was favorable by \$285.
- b. The price variance was favorable by \$300.
- c. The efficiency variance was unfavorable by \$1,185.
- d. The flexible budget variance was unfavorable by \$900.

134. CSO: 1C1e LOS: 1C1k

A company isolates its raw material price variance in order to provide the earliest possible information to the manager responsible for the variance. The budgeted amount of material usage for the year was computed as follows.

$$150,000 \text{ units of finished goods} \times 3 \text{ pounds/unit} \times \$2.00/\text{pound} = \$900,000.$$

Actual results for the year were the following.

Finished goods produced	160,000 units
Raw materials purchased	500,000 pounds
Raw materials used	490,000 pounds
Cost per pound	\$2.02

The raw material price variance for the year was

- a. \$9,600 unfavorable.
- b. \$9,800 unfavorable.
- c. \$10,000 unfavorable.
- d. \$20,000 unfavorable.

135. CSO: 1C1e LOS: 1C1l

Lee Manufacturing uses a standard cost system with overhead applied based on direct labor hours. The manufacturing budget for the production of 5,000 units for the month of May included the following information.

Direct labor (10,000 hours at \$15 per hour)	\$150,000
Variable overhead	30,000
Fixed overhead	80,000

During May, 6,000 units were produced and the direct labor efficiency variance was \$1,500 unfavorable. Based on this information, the actual number of direct labor hours used in May was

- a. 9,900 hours.
- b. 10,100 hours.
- c. 11,900 hours.
- d. 12,100 hours.



136. CSO: 1C1e LOS: 1C1k

At the beginning of the year, Douglas Company prepared the following monthly budget for direct materials.

<u>Units produced and sold</u>	<u>10,000</u>	<u>15,000</u>
Direct material	\$15,000	\$22,500

At the end of the month, the company's records showed that 12,000 units were produced and sold and \$20,000 was spent for direct materials. The variance for direct materials is

- a. \$2,000 favorable.
- b. \$2,000 unfavorable.
- c. \$5,000 favorable.
- d. \$5,000 unfavorable.

137. CSO: 1C1e LOS: 1C1k

Randall Company uses standard costing and flexible budgeting and is evaluating its direct labor. The total budget variance can usually be broken down into two other variances identified as the

- a. direct labor rate variance and direct labor efficiency variance.
- b. direct labor cost variance and the direct labor volume variance.
- c. direct labor rate variance and direct labor volume variance.
- d. direct labor cost variance and direct labor efficiency variance.

138. CSO: 1C1e LOS: 1C1k

Richter Company has an unfavorable materials efficiency (usage) variance for a particular month. Which one of the following is **least** likely to be the cause of this variance?

- a. Inadequate training of the direct labor employees.
- b. Poor performance of the shipping employees.
- c. Poor design of the production process or product.
- d. Poor quality of the raw materials.

139. CSO: 1C1e LOS: 1C1k

A company had a total labor variance of \$15,000 favorable and a labor efficiency variance of \$18,000 unfavorable. The labor price variance was

- a. \$3,000 favorable.
- b. \$3,000 unfavorable.
- c. \$33,000 favorable.
- d. \$33,000 unfavorable.

140. *CSO: 1C1e LOS: 1C1r*

Cordell Company uses a standard cost system. On January 1 of the current year, Cordell budgeted fixed manufacturing overhead cost of \$600,000 and production at 200,000 units. During the year, the firm produced 190,000 units and incurred fixed manufacturing overhead of \$595,000. The production volume variance for the year was

- a. \$5,000 unfavorable.
- b. \$10,000 unfavorable.
- c. \$25,000 unfavorable.
- d. \$30,000 unfavorable.

141. *CSO: 1C1e LOS: 1C1r*

Highlight Inc. uses a standard cost system and applies factory overhead to products on the basis of direct labor hours. If the firm recently reported a favorable direct labor efficiency variance, then the

- a. variable overhead spending variance must be favorable.
- b. variable overhead efficiency variance must be favorable.
- c. fixed overhead volume variance must be unfavorable.
- d. direct labor rate variance must be unfavorable.

142. *CSO: 1C1e LOS: 1C1r*

Harper Company's performance report indicated the following information for the past month.

Actual total overhead	\$1,600,000
Budgeted fixed overhead	1,500,000
Applied fixed overhead at \$3 per labor hour	1,200,000
Applied variable overhead at \$.50 per labor hour	200,000
Actual labor hours	430,000

Harper's total overhead spending variance for the month was

- a. \$100,000 favorable.
- b. \$115,000 favorable.
- c. \$185,000 unfavorable.
- d. \$200,000 unfavorable.

143. *CSO: 1C1e LOS: 1C1r*

The JoyT Company manufactures Maxi Dolls for sale in toy stores. In planning for this year, JoyT estimated variable factory overhead of \$600,000 and fixed factory overhead of \$400,000. JoyT uses a standard costing system, and factory overhead is allocated to units produced on the basis of standard direct labor hours. The denominator level of activity budgeted for this year was 10,000 direct labor hours, and JoyT used 10,300 actual direct labor hours.

Based on the output accomplished during this year, 9,900 standard direct labor hours should have been used. Actual variable factory overhead was \$596,000, and actual fixed factory overhead was \$410,000 for the year. Based on this information, the variable overhead spending variance for JoyT for this year was

- a. \$24,000 unfavorable.
- b. \$2,000 unfavorable.
- c. \$4,000 favorable.
- d. \$22,000 favorable.

144. *CSO: 1C1e LOS: 1C1r*

A company has a fixed overhead volume variance that is \$10,000 unfavorable. The **most** likely cause for this variance is that

- a. the production supervisory salaries were greater than planned.
- b. the production supervisory salaries were less than planned.
- c. more was produced than planned.
- d. less was produced than planned.

145. *CSO: 1C1e LOS: 1C1r*

When using a flexible budgeting system, the computation for the variable overhead spending variance is the difference between

- a. actual variable overhead and the previously budgeted amount.
- b. the previously budgeted amount and actual inputs times the budgeted rate.
- c. the amount applied to work-in-process and actual variable overhead.
- d. actual variable overhead and actual inputs times the budgeted rate.

146. CSO: 1C1e LOS: 1C1s

Fortune Corporation's Marketing Department recently accepted a rush order for a nonstock item from a valued customer. The Marketing Department filed the necessary paperwork with the Production Department, which complained greatly about the lack of time to do the job the right way. Nevertheless, the Production Department accepted the manufacturing commitment and filed the required paperwork with the Purchasing Department for the needed raw materials. A purchasing clerk temporarily misplaced the paperwork. By the time the paperwork was found, it was too late to order from the company's regular supplier. A new supplier was located, and that vendor quoted a very attractive price. The materials arrived and were rushed into production, bypassing the normal inspection processes (as directed by the Production Department supervisor) to make up for lost time. Unfortunately, the goods were of low quality and created considerable difficulty for Fortune's assembly-line personnel. Which of the following **best** indicates the responsibility for the materials usage variance in this situation?

- a. Purchasing.
- b. Purchasing and Marketing.
- c. Marketing and Production.
- d. Purchasing, Marketing, and Production.

147. CSO: 1C1e LOS: 1C1s

Johnson Inc. has established per unit standards for material and labor for its production department based on 900 units normal production capacity as shown below.

3 lbs. of direct materials @ \$4 per lb.	\$12
1 direct labor hour @ \$15 per hour	<u>15</u>
Standard cost per unit	<u>\$27</u>

During the year 1,000 units were produced. The accounting department has charged the production department supervisor with the following unfavorable variances.

<u>Materials Quantity Variance</u>		<u>Material Price Variance</u>	
Actual usage	3,300 lbs.	Actual cost	\$12,600
Standard usage	3,000 lbs.	Standard cost	12,000
Unfavorable	300 lbs.	Unfavorable	\$600

Bob Sterling, the production supervisor, has received a memorandum from his boss stating that he did not meet the established standards for material prices and quantity and corrective action should be taken. Sterling is very unhappy about the situation and is preparing to reply to the memorandum explaining the reasons for his dissatisfaction. All of the following are valid reasons for Sterling's dissatisfaction **except** that the

- a. material price variance is the responsibility of the purchasing department.
- b. cause of the unfavorable material usage variance was the acquisition of substandard material.
- c. standards have not been adjusted to the engineering changes.
- d. variance calculations fail to properly reflect that actual production exceeded normal production capacity.

148. CSO: 1C1e LOS: 1C1s

During the month of May, Tyler Company experienced a significant unfavorable material efficiency variance in the production of its single product at one of Tyler's plants. Which one of the following reasons would be **least** likely to explain why the unfavorable variance arose?

- a. Inferior materials were purchased.
- b. Actual production was lower than planned production.
- c. Workers used were less-skilled than expected.
- d. Replacement production equipment had just been installed.

149. CSO: 1C2a LOS: 1C2a

Sara Bellows, manager of the telecommunication sales team, has the following department budget.

Billings - long distance	\$350,000
Billings - phone card	75,000
Billings - toll free	265,000

Her responsibility center is **best** described as a

- a. cost center.
- b. revenue center.
- c. profit center.
- d. investment center.

150. CSO: 1C2a LOS: 1C2b

The production manager of the Super T-shirt Company is responsible for the activity of her department and the costs associated with production. Super T adheres to a responsibility centered budget process, and the manager's performance is measured by how well she performs to budget. Recently, the dark horse team won the local college basketball tournament. As a result, the sales department, which operates as a profit center, received an order for 10,000 t-shirts, but only if they could be delivered in three days. The production manager said she could meet the schedule, but only by incurring overtime pay that would cause her to be over budget for hourly wages paid. What would be the **best** course of action for the sales department and the production manager to undertake in this case?

- a. Accept the order and overrun the production manager's budget.
- b. Refuse the overtime and produce only what the production department is capable of while staying within the budget.
- c. Accept the order and ignore the effect on the production department budget when conducting the performance review.
- d. Charge the overtime to the sales department's budget.

151. *CSO: 1C2a LOS: 1C2f*

Most firms allocate corporate and other support costs to divisions and departments for all of the following reasons **except** to

- a. remind profit-center managers that earnings must be adequate to cover some share of the indirect costs.
- b. stimulate profit-center managers to put pressure on central managers to control service costs.
- c. create competition between divisions and departments, and their managers.
- d. fix accountability and evaluate profit centers.

152. *CSO: 1C2a LOS: 1C2f*

Which one of the following allocation approaches will ensure that the production departments do not underestimate their planned usage of service at the start of the budget period as well as make the service departments cost efficient?

- a. The use of actual rates and actual hours for both fixed and variable costs.
- b. Budgeted rates and standard hours allowed for output attained for variable costs and budgeted rates and capacity available for fixed costs.
- c. The use of rates and quantities based on long-term historical averages for both variable and fixed costs.
- d. The use of a budgeted lump-sum amount based on estimates provided by the production departments for both variable and fixed costs.

153. *CSO: 1C2b LOS: 1C2h*

Which one of the following is an **incorrect** description of transfer pricing?

- a. It measures the value of goods or services furnished by a profit center to other responsibility centers within a company.
- b. If a market price exists, this price may be used as a transfer price.
- c. It measures exchanges between a company and external customers.
- d. If no market price exists, the transfer price may be based on cost.

154. CSO: 1C2b LOS: 1C2i

Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10

Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm. The **best** process to determine the price ultimately charged by the Fabrication Division to the Assembly Division for the circuit board is to

- establish the price by top management.
- establish the price by an arbitration committee.
- establish the price through negotiations between the Fabrication's and Electronic Assembly's Division management.
- set the price equal to the price that would be charged if the Fabrication Department had no excess capacity.

155. CSO: 1C2b LOS: 1C2i

Happy Time Industries uses segment reporting for all of its decentralized divisions. It has several products that are transferred from one division to other divisions. Happy Time wants to motivate the manager of the selling division to produce efficiently. Assuming the following methods are available, the **optimal** transfer pricing method should be a

- cost-based transfer price that uses actual amounts.
- cost-based transfer price that uses budgeted amounts.
- variable cost-based transfer price that uses actual amounts.
- market-based transfer price.

156. CSO: 1C2b LOS: 1C2k

Morrison's Plastics Division, a profit center, sells its products to external customers as well as to other internal profit centers. Which one of the following circumstances would justify the Plastics Division selling a product internally to another profit center at a price that is below the market-based transfer price?

- The buying unit has excess capacity.
- The selling unit is operating at full capacity.
- Routine sales commissions and collection costs would be avoided.
- The profit centers' managers are evaluated on the basis of unit operating income.

157. CSO: 1C2b LOS: 1C2i

With respect to a firm's transfer pricing policy, an advantage of using a dual pricing arrangement is that it

- a. provides an incentive for the supplying subunit to control costs.
- b. exposes the supplying subunit to the discipline of market prices.
- c. promotes goal congruence between the supplying and buying subunits of the firm.
- d. simplifies tax calculations when the buying and supplying subunits are taxed in different jurisdictions.

158. CSO: 1C2b LOS: 1C2j

Manhattan Corporation has several divisions that operate as decentralized profit centers. At the present time, the Fabrication Division has excess capacity of 5,000 units with respect to the UT-371 circuit board, a popular item in many digital applications. Information about the circuit board follows.

Market price	\$48
Variable selling/distribution costs on external sales	5
Variable manufacturing cost	21
Fixed manufacturing cost	10

Manhattan's Electronic Assembly Division wants to purchase 4,500 circuit boards either internally, or else use a similar board in the marketplace that sells for \$46. The Electronic Assembly Division's management feels that if the first alternative is pursued, a price concession is justified, given that both divisions are part of the same firm. To optimize the overall goals of Manhattan, the minimum price to be charged for the board from the Fabrication Division to the Electronic Assembly Division should be

- a. \$21.
- b. \$26.
- c. \$31.
- d. \$46.

159. CSO: 1C2b LOS: 1C2k

Kern Manufacturing has several divisions and evaluates performance using segment income. Since sales include transfers to other divisions, Kern has established a price for internal sales as cost plus 10%. Red Division has requested 10,000 units of Green Division's product. Green Division is selling its product externally at a 60% markup over cost. The corporate policy will encourage the Green Division to

- a. transfer the product to the Red Division because all costs are being covered and the division will earn a 10% profit.
- b. reject the sale to the Red Division because it does not provide the same markup as external sales.
- c. accept the sale to the Red Division if it is operating at full capacity and the sale will contribute to fixed costs.
- d. transfer the product to the Red Division if it does not require the Green Division to give up any external sales.



160. CSO: 1C3b LOS: 1C3q

Consider the following categories of performance measures.

- I. Profitability measures.
- II. Customer-satisfaction measures.
- III. Efficiency, quality, and time measures.
- IV. Innovation measures.

A cruise line operates on a national scale in a very competitive marketplace. In view of this information, which measures should the company use in the evaluation of its managers?

- a. I only.
- b. I and II.
- c. II and III.
- d. I, II, III, and IV.

161. CSO: 1C3b LOS: 1C3a

All of the following are considered appropriate goals for measuring a division manager's efficiency for a budgeting period **except**

- a. budgeted operating income.
- b. a targeted share of the market.
- c. earnings per share projections.
- d. a reduction in the organizational structure (fewer employees doing a given amount of work).

162. CSO: 1C3b LOS: 1C3a

David Burke is manager of claims processing for Continental Health Care System. His performance is evaluated using various measures agreed upon in advance with Diane Lewis, general manager. Lewis asked Burke to recommend several measures to evaluate the performance of his unit next year. Which one of the following performance measures would likely have the **least** positive effect on Burke's motivation and performance?

- a. Processing cost per claim.
- b. Average processing time per claim.
- c. Percentage of claims processed accurately the first time.
- d. Total dollar amount of claims processed per month.

163. CSO: 1C3b LOS: 1C3a

Paul Cooper, shipping manager for DFG Distributors, is responsible for managing the staff and all related transportation equipment to fill orders for bakery products from local retailers and deliver the products to those retailers. Which one of the following groups of three performance measures **most** likely would result in the highest level of goal congruence?

- a. Labor cost per order; transportation cost per order; number of orders completed per day.
- b. The percentage of orders filled on time; the percentage of orders filled accurately; average cost to fill and deliver an order.
- c. Customer satisfaction; elapsed time to complete an order; percentage of orders filled accurately.
- d. Orders completed per employee per day; employee injuries per hour worked; number of vehicle accidents per year.

164. CSO: 1C3b LOS: 1C3a

P.C. Programs Inc. produces software for individual users and small businesses. Rita Morgan manages the customer hot line department for the firm and is responsible for answering customer questions related to software products produced by all divisions of the firm. For purposes of promoting goal congruence, which one of the following would be the **least** appropriate measure of her performance?

- a. Average time to provide an answer or solution to a customer.
- b. Number of calls to the hot line for each new release of software.
- c. Average time a customer is on hold.
- d. Number of customer complaints due to incorrect responses given to customers.

165. CSO: 1C3b LOS: 1C3a

Which one of the following should be used for evaluating the performance of the Repair and Maintenance Department that repairs production equipment in a firm devoted to making keyboards for computers?

- a. The variance between the firm's budgeted and actual net income.
- b. The total factory overhead variances.
- c. The fixed overhead volume variances.
- d. The response time and degree of satisfaction among the production departments.

166. CSO: 1C3b LOS: 1C3a

Albert Hathaway recently joined Brannen University as the chief information officer of the University Computing Services Department. His assigned task is to help reduce the recurrent problem of cost overruns due to uncontrolled computer usage by the user community, while at the same time not curtailing the use of information technology for research and teaching. To ensure goal congruence, which one of the following algorithms should be used to allocate the cost of the University Computing Services Department to other departments within the university?

- a. Actual rate times actual hours of computer usage.
- b. Actual rate times budgeted hours of computer usage.
- c. Budgeted rate times actual hours of computer usage.
- d. Budgeted rate times budgeted hours of computer usage.

167. CSO: 1C3d LOS: 1C3i

For several years, Northern Division of Marino Company has maintained a positive residual income. Northern is currently considering investing in a new project that will lower the division's overall return on investment (ROI) but increase its residual income. What is the relationship between the expected rate of return on the new project, the firm's cost of capital, and the division's current ROI?

- a. The expected rate of return on the new project is higher than the division's current return on investment, but lower than the firm's cost of capital.
- b. The firm's cost of capital is higher than the expected rate of return on the new project, but lower than the division's current return on investment.
- c. The division's current return on investment is higher than the expected rate of return on the new project, but lower than the firm's cost of capital.
- d. The expected rate of return on the new project is higher than the firm's cost of capital, but lower than the division's current return on investment.

168. CSO: 1C3d LOS: 1C3f

KHD Industries is a multidivisional firm that evaluates its managers based on the return on investment (ROI) earned by their divisions. The evaluation and compensation plans use a targeted ROI of 15% (equal to the cost of capital) and managers receive a bonus of 5% of basic compensation for every one-percentage point that the division's ROI exceeds 15%. David Evans, manager of the Consumer Products Division, has made a forecast of the division's operations and finances for next year that indicates the ROI would be 24%. In addition, new short-term programs were identified by the Consumer Products Division and evaluated by the finance staff as follows.

<u>Program</u>	<u>Projected ROI</u>
A	13%
B	19%
C	22%
D	31%

Assuming no restrictions on expenditures, what is the optimal mix of new programs that would add value to KHD Industries?

- A, B, C, and D.
- B, C, and D only.
- C and D only.
- D only.

169. CSO: 1C3d LOS: 1C3f

Performance results for four geographic divisions of a manufacturing company are shown below.

<u>Division</u>	<u>Target Return on Investment</u>	<u>Actual Return on Investment</u>	<u>Return on Sales</u>
A	18%	18.1%	8%
B	16	20.0	8
C	14	15.8	6
D	12	11.0	9

The division with the **best** performance is

- Division A.
- Division B.
- Division C.
- Division D.

170. CSO: 1C3d LOS: 1C3f

Vincent Hospital has installed a new computer system. The system was designed and constructed based on the anticipated number of hours of usage required by the various hospital departments according to projections made by the departmental managers. Virtually all of the operating costs of the system are fixed. What would be the **most** systematic and rational manner in which to allocate the new computer system costs to the various hospital departments?

- a. To each department equally.
- b. By the anticipated number of hours of usage.
- c. By actual usage by each department.
- d. By the revenue generated in each department.

171. CSO: 1C3d LOS: 1C3i

Oakmont Company has two divisions, Household Appliances and Construction Equipment. The manager of the Household Appliances Division is evaluated on the basis of return on investment (ROI). The manager of the Construction Equipment Division is evaluated on the basis of residual income. The cost of capital has been 12% and the return on investment has been 16% for the two divisions. Each manager is currently considering a project with a 14% rate of return. According to the current evaluation system for managers, which manager(s) would have incentive to undertake the project?

- a. Both managers would have incentive to undertake the project.
- b. Neither manager would have incentive to undertake the project.
- c. The manager of the Household Appliances Division would have incentive to undertake the project while the manager of the Construction Equipment Division would not have incentive to undertake the project.
- d. The manager of the Construction Equipment Division would have incentive to undertake the project while the manager of the Household Appliances Division would not have incentive to undertake the project.

172. CSO: 1C3e LOS: 1C3g

A company is concerned that its divisional managers are not making decisions that are in the **best** interests of the overall corporation. In order to prevent this, the company should use a performance evaluation system that focuses on

- a. flexible budget variances.
- b. operating income.
- c. controllable costs.
- d. residual income.

173. CSO: 1C3q LOS: 1C3l

To insure that a divisional vice president places appropriate focus on both the short-term and the long-term objectives of the division, the **best** approach would be to evaluate the vice president's performance by using

- a. return on investment (ROI) which permits easy and quick comparisons to other similar divisions.
- b. residual income since it will eliminate the rejection of capital investments that have a return less than ROI but greater than the cost of capital.
- c. division segment margin or profit margin.
- d. financial and nonfinancial measures, including the evaluation of quality, customer satisfaction, and market performance.

174. CSO: 1C3h LOS: 1C3m

The balanced scorecard provides an action plan for achieving competitive success by focusing management attention on critical success factors. Which one of the following is **not** one of the competitive success factors commonly focused upon in the balanced scorecard?

- a. Competitor business strategies.
- b. Financial performance measures.
- c. Internal business processes.
- d. Employee innovation and learning.

175. CSO: 1C3h LOS: 1C3m

Which one of the following statements about a balanced scorecard is **incorrect**?

- a. It seeks to address the problems associated with traditional financial measures used to assess performance.
- b. The notion of value chain analysis plays a major role in the drawing up of a balanced scorecard.
- c. It relies on the perception of the users with regard to service provided.
- d. It is directly derived from the scientific management theories.

## Section D: Cost Management

176. CSO: 1D1a LOS: 1D1a

Manchester Airlines is in the process of preparing a contribution margin income statement that will allow a detailed look at its variable costs and profitability of operations. Which one of the following cost combinations should be used to evaluate the variable cost per flight of the company's Boston-Las Vegas flights?

1D1a

- a. Flight crew salary, fuel, and engine maintenance.
- b. Fuel, food service, and airport landing fees.
- c. Airplane depreciation, baggage handling, and airline marketing.
- d. Communication system operation, food service, and ramp personnel.

177. CSO: 1D1a LOS: 1D1a

Which one of the following items would **not** be considered a manufacturing cost?

- a. Cream for an ice cream maker.
- b. Sales commissions for a car manufacturer.
- c. Plant property taxes for an ice cream maker.
- d. Tires for an automobile manufacturer.

178. CSO: 1D1a LOS: 1D1a

Taylor Corporation is determining the cost behavior of several items in order to budget for the upcoming year. Past trends have indicated the following dollars were spent at three different levels of output.

	Unit Levels		
	<u>10,000</u>	<u>12,000</u>	<u>15,000</u>
Cost A	\$25,000	\$29,000	\$35,000
Cost B	10,000	15,000	15,000
Cost C	15,000	18,000	22,500

In establishing a budget for 14,000 units, Taylor should treat Costs A, B, and C, respectively, as

- a. semivariable, fixed, and variable.
- b. variable, fixed, and variable.
- c. semivariable, semivariable, and semivariable.
- d. variable, semivariable, and semivariable.

179. CSO: 1D1a LOS: 1D1a

Which one of the following refers to a cost that remains the same as the volume of activity decreases within the relevant range?

- a. Average cost per unit.
- b. Variable cost per unit.
- c. Unit fixed cost.
- d. Total variable cost.

180. CSO: 1D1a LOS: 1D1a

Fowler Co. provides the following summary of its total budgeted production costs at three production levels.

	<u>Volume in Units</u>		
	<u>1,000</u>	<u>1,500</u>	<u>2,000</u>
Cost A	\$1,420	\$2,130	\$2,840
Cost B	\$1,550	\$2,200	\$2,900
Cost C	\$1,000	\$1,000	\$1,000
Cost D	\$1,630	\$2,445	\$3,260

The cost behavior of each of the Costs A through D, respectively, is

- semi-variable, variable, fixed, and variable.
- variable, semi-variable, fixed, and semi-variable.
- variable, fixed, fixed, and variable.
- variable, semi-variable, fixed, and variable.

181. CSO: 1D1a LOS: 1D1a

Roberta Johnson is the manager of SleepWell Inn, one of a chain of motels located throughout the United States. An example of an operating cost at SleepWell that is semivariable is

- the security guard's salary.
- electricity.
- postage for reservation confirmations.
- local yellow pages advertising.

182. CSO: 1D1a LOS: 1D1b

The marketing manager of Ames Company has learned the following about a new product that is being introduced by Ames. Sales of this product are planned at \$100,000 for the first year. Sales commission expense is budgeted at 8% of sales plus the marketing manager's incentive budgeted at an additional ½%. The preparation of a product brochure will require 20 hours of marketing salaried staff time at an average rate of \$100 per hour, and 10 hours, at \$150 per hour, for an outside illustrator's effort. The variable marketing cost for this new product will be

- \$8,000.
- \$8,500.
- \$10,000.
- \$10,500.



183. CSO: 1D1a LOS: 1D1c

Indirect and common costs often make up a significant portion of the cost of a product. All of the following are reasons for indirect cost allocation to cost objects **except** to

- a. reduce total costs identified with products.
- b. measure income and assets for external reporting purposes.
- c. justify costs for reimbursement purposes.
- d. provide information for economic decision making.

184. CSO: 1D1a LOS: 1D1a

The relevant range refers to the activity levels over which

- a. cost relationships hold constant.
- b. costs fluctuate.
- c. production varies.
- d. relevant costs are incurred.

185. CSO: 1D1a LOS: 1D1a

Cell Company has discovered that the cost of processing customer invoices is strictly variable within the relevant range. Which one of the following statements concerning the cost of processing customer invoices is **incorrect**?

- a. The total cost of processing customer invoices will increase as the volume of customer invoices increases.
- b. The cost per unit for processing customer invoices will decline as the volume of customer invoices increases.
- c. The cost of processing the 100th customer invoice will be the same as the cost of processing the first customer invoice.
- d. The average cost per unit for processing a customer invoice will equal the incremental cost of processing one more customer invoice.

186. CSO: 1D1a LOS: 1D1a

When identifying fixed and variable costs, which one of the following is a typical assumption concerning cost behavior?

- a. General and administrative costs are assumed to be variable costs.
- b. Cost behavior is assumed to be realistic for all levels of activity from zero to maximum capacity.
- c. Total costs are assumed to be linear when plotted on a graph.
- d. The relevant time period is assumed to be five years.

187. CSO: 1D1a LOS: 1D1a

Lar Company has found that its total electricity cost has both a fixed component and a variable component within the relevant range. The variable component seems to vary directly with the number of units produced. Which one of the following statements concerning Lar's electricity cost is **incorrect**?

- a. The total electricity cost will increase as production volume increases.
- b. The total electricity cost per unit of production will increase as production volume increases.
- c. The variable electricity cost per unit of production will remain constant as production volume increases.
- d. The fixed electricity cost per unit of production will decline as production volume increases.

188. CSO: 1D1b LOS: 1D1e

Kimber Company has the following unit cost for the current year.

Raw material	\$20.00
Direct labor	25.00
Variable manufacturing overhead	10.00
Fixed manufacturing overhead	<u>15.00</u>
Total unit cost	<u>\$70.00</u>

Fixed manufacturing cost is based on an annual activity level of 8,000 units. Based on these data, the total manufacturing cost expected to be incurred to manufacture 9,000 units in the current year is

- a. \$560,000.
- b. \$575,000.
- c. \$615,000.
- d. \$630,000.

189. CSO: 1D1b LOS: 1D1a

A review of Plunkett Corporation's accounting records for last year disclosed the following selected information.

Variable costs	
Direct materials used	\$ 56,000
Direct labor	179,100
Manufacturing overhead	154,000
Selling costs	108,400
Fixed costs	
Manufacturing overhead	267,000
Selling costs	121,000
Administrative costs	235,900

In addition, the company suffered a \$27,700 uninsured factory fire loss during the year. What were Plunkett's product costs and period costs for last year?

	<u>Product</u>	<u>Period</u>
a.	\$235,100	\$914,000.
b.	\$497,500	\$651,600.
c.	\$656,100	\$493,000.
d.	\$683,800	\$465,300.

190. CSO: 1D1b LOS: 1D1e

Normal costing systems are said to offer a user several distinct benefits when compared with actual costing systems. Which one of the following is **not** a benefit associated with normal costing systems?

- a. More timely costing of jobs and products.
- b. A smoothing of product costs throughout the period.
- c. Improved accuracy of job and product costing.
- d. A more economical way of attaching overhead to a job or product.

191. CSO: 1D1b LOS: 1D1e

From the following budgeted data, calculate the budgeted indirect cost rate that would be used in a normal costing system.

Total direct labor hours	250,000
Direct costs	\$10,000,000
Total indirect labor hours	50,000
Total indirect-labor-related costs	\$ 5,000,000
Total indirect non-labor related costs	\$ 7,000,000

- a. \$20.
- b. \$28.
- c. \$40.
- d. \$48.

192. CSO: 1D1c LOS: 1D1e

Merlene Company uses a standard cost accounting system. Data for the last fiscal year are as follows.

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50

	<u>Per Unit</u>
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*

Budgeted selling and administrative costs (all fixed) \$45,000

\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

The amount of operating income earned by Merlene for the last fiscal year using variable costing was

- a. \$21,500.
- b. \$22,500.
- c. \$28,000.
- d. \$31,000.

193. CSO: 1D1c LOS: 1D1e

Loyal Co. produces three types of men's undershirts: T-shirts, V-neck shirts, and athletic shirts. In the Folding and Packaging Department, operations costing is used to apply costs to individual units, based on the standard time allowed to fold and package each type of undershirt. The standard time to fold and package each type of undershirt is as follows.

T-shirt	40 seconds per shirt
V-neck shirt	40 seconds per shirt
Athletic shirt	20 seconds per shirt

During the month of April, Loyal produced and sold 50,000 T-shirts, 30,000 V-neck shirts, and 20,000 athletic shirts. If costs in the Folding and Packaging Department were \$78,200 during April, how much folding and packaging cost should be applied to each T-shirt?

- a. \$.52134.
- b. \$.6256.
- c. \$.7820.
- d. \$.8689.

194. CSO: 1D1d LOS: 1D1g

Dremmon Corporation uses a standard cost accounting system. Data for the last fiscal year are as follows.

	<u>Units</u>
Beginning inventory of finished goods	100
Production during the year	700
Sales	750
Ending inventory of finished goods	50
 <u>Per Unit</u>	
Product selling price	\$200
Standard variable manufacturing cost	90
Standard fixed manufacturing cost	20*

Budgeted selling and administrative costs (all fixed) \$45,000

\*Denominator level of activity is 750 units for the year.

There were no price, efficiency, or spending variances for the year, and actual selling and administrative expenses equaled the budget amount. Any volume variance is written off to cost of goods sold in the year incurred. There are no work-in-process inventories.

Assuming that Dremmon used absorption costing, the amount of operating income earned in the last fiscal year was

- a. \$21,500.
- b. \$27,000.1D1d
- c. \$28,000.
- d. \$30,000.

195. CSO: 1D1d LOS: 1D1g

Chassen Company, a cracker and cookie manufacturer, has the following unit costs for the month of June.

<u>Variable manufacturing cost</u>	<u>Variable marketing cost</u>	<u>Fixed manufacturing cost</u>	<u>Fixed marketing cost</u>
\$5.00	\$3.50	\$2.00	\$4.00

A total of 100,000 units were manufactured during June of which 10,000 remain in ending inventory. Chassen uses the first-in, first-out (FIFO) inventory method, and the 10,000 units are the only finished goods inventory at month-end. Using the full absorption costing method, Chassen's finished goods inventory value would be

- a. \$50,000.
- b. \$70,000.
- c. \$85,000.
- d. \$145,000.

196. CSO: 1D1d LOS: 1D1g

Consider the following situation for Weisman Corporation for the prior year.

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing costs	10
Fixed manufacturing costs	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

The operating income for Weisman for the prior year using absorption costing was

- a. \$13,600.
- b. \$14,200.
- c. \$15,300.
- d. \$15,840.

197. CSO: 1D1d LOS: 1D1f

When comparing absorption costing with variable costing, the difference in operating income can be explained by the difference between the

- a. units sold and the units produced, multiplied by the unit sales price.
- b. ending inventory in units and the beginning inventory in units, multiplied by the budgeted fixed manufacturing cost per unit.
- c. ending inventory in units and the beginning inventory in units, multiplied by the unit sales price.
- d. units sold and the units produced, multiplied by the budgeted variable manufacturing cost per unit.

198. CSO: 1D1d LOS: 1D1g

Mill Corporation had the following unit costs for the recently concluded calendar year.

	<u>Variable</u>	<u>Fixed</u>
Manufacturing	\$8.00	\$3.00
Nonmanufacturing	\$2.00	\$5.50

Inventory for Mill's sole product totaled 6,000 units on January 1 and 5,200 units on December 31. When compared to variable costing income, Mill's absorption costing income is

- a. \$2,400 lower.
- b. \$2,400 higher.
- c. \$6,800 lower.
- d. \$6,800 higher.

199. CSO: 1D1d LOS: 1D1f

Which of the following correctly shows the treatment of (1) factory insurance, (2) direct labor, and (3) finished goods shipping costs under absorption costing and variable costing?

	<u>Absorption Costing</u>		<u>Variable Costing</u>	
	<u>Product Cost</u>	<u>Period Cost</u>	<u>Product Cost</u>	<u>Period Cost</u>
a.	1, 2	3	2	1, 3.
b.	2	1, 3	1, 2	3.
c.	1, 2	3	1	2, 3.
d.	1	2, 3	2, 3	1.



200. CSO: 1D1d LOS: 1D1g

Troughton Company manufactures radio-controlled toy dogs. Summary budget financial data for Troughton for the current year are as follows.

Sales (5,000 units at \$150 each)	\$750,000
Variable manufacturing cost	400,000
Fixed manufacturing cost	100,000
Variable selling and administrative cost	80,000
Fixed selling and administrative cost	150,000

Troughton uses an absorption costing system with overhead applied based on the number of units produced, with a denominator level of activity of 5,000 units. Underapplied or overapplied manufacturing overhead is written off to cost of goods sold in the year incurred. The \$20,000 budgeted operating income from producing and selling 5,000 toy dogs planned for this year is of concern to Trudy George, Troughton's president. She believes she could increase operating income to \$50,000 (her bonus threshold) if Troughton produces more units than it sells, thus building up the finished goods inventory. How much of an increase in the number of units in the finished goods inventory would be needed to generate the \$50,000 budgeted operating income?

- a. 556 units.
- b. 600 units.
- c. 1,500 units.
- d. 7,500 units.

201. CSO: 1D1e LOS: 1D1f

If a manufacturing company uses variable costing to cost inventories, which of the following costs are considered inventoriable costs?

- a. Only raw material, direct labor, and variable manufacturing overhead costs.
- b. Only raw material, direct labor, variable and fixed manufacturing overhead costs.
- c. Only raw material, direct labor, variable manufacturing overhead and variable selling and administrative costs.
- d. Only raw material and direct labor costs.

202. CSO: 1C1e LOS: 1D1f

Xylon Company uses direct (variable) costing for internal reporting and absorption costing for the external financial statements. A review of the firm's internal and external disclosures will likely find

- a. a difference in the treatment of fixed selling and administrative costs.
- b. a higher inventoriable unit cost reported to management than to the shareholders.
- c. a contribution margin rather than gross margin in the reports released to shareholders.
- d. internal income figures that vary closely with sales and external income figures that are influenced by both units sold and productive output.

203. CSO: 1D1e LOS: 1D1g

Bethany Company has just completed the first month of producing a new product but has not yet shipped any of this product. The product incurred variable manufacturing costs of \$5,000,000, fixed manufacturing costs of \$2,000,000, variable marketing costs of \$1,000,000, and fixed marketing costs of \$3,000,000.

If Bethany uses the variable cost method to value inventory, the inventory value of the new product would be

- a. \$5,000,000.
- b. \$6,000,000.
- c. \$8,000,000.
- d. \$11,000,000.

204. CSO: 1D1e LOS: 1D1g

Consider the following situation for Donaldson Company for the prior year.

- The company produced 1,000 units and sold 900 units, both as budgeted.
- There were no beginning or ending work-in-process inventories and no beginning finished goods inventory.
- Budgeted and actual fixed costs were equal, all variable manufacturing costs are affected by volume of production only, and all variable selling costs are affected by sales volume only.
- Budgeted per unit revenues and costs were as follows.

	<u>Per Unit</u>
Sales price	\$100
Direct materials	30
Direct labor	20
Variable manufacturing costs	10
Fixed manufacturing costs	5
Variable selling costs	12
Fixed selling costs (\$3,600 total)	4
Fixed administrative costs (\$1,800 total)	2

Assuming that Donaldson uses variable costing, the operating income for the prior year was

- a. \$13,600.
- b. \$14,200.
- c. \$14,800.
- d. \$15,300.

205. CSO: 1D1e LOS: 1D1g

During the month of May, Robinson Corporation sold 1,000 units. The cost per unit for May was as follows.

	<u>Cost Per Unit</u>
Direct materials	\$ 5.50
Direct labor	3.00
Variable manufacturing overhead	1.00
Fixed manufacturing overhead	1.50
Variable administrative costs	.50
Fixed administrative costs	<u>3.50</u>
Total	<u>\$15.00</u>

May's income using absorption costing was \$9,500. The income for May, if variable costing had been used, would have been \$9,125. The number of units Robinson produced during May was

- a. 750 units.
- b. 925 units.
- c. 1,075 units.
- d. 1,250 units.

206. CSO: 1D1e LOS: 1D1f

Which one of the following is the **best** reason for using variable costing?

- a. Fixed factory overhead is more closely related to the capacity to produce than to the production of specific units.
- b. All costs are variable in the long term.
- c. Variable costing is acceptable for income tax reporting purposes.
- d. Variable costing usually results in higher operating income than if a company uses absorption costing.

207. CSO: 1D1e LOS: 1D1f

Dawn Company has significant fixed overhead costs in the manufacturing of its sole product, auto mufflers. For internal reporting purposes, in which one of the following situations would ending finished goods inventory be higher under direct (variable) costing rather than under absorption costing?

- a. If more units were produced than were sold during a given year.
- b. If more units were sold than were produced during a given year.
- c. In all cases when ending finished goods inventory exists.
- d. None of these situations.

208. *CSO: 1D1f LOS: 1D1j*  
The primary purpose for allocating common costs to joint products is to determine
- the selling price of a by-product.
  - whether or not one of the joint products should be discontinued.
  - the variance between budgeted and actual common costs.
  - the inventory cost of joint products for financial reporting.
209. *CSO: 1D1f LOS: 1D1j*  
The distinction between joint products and by-products is largely dependent on
- historical costs.
  - prime costs.
  - market value.
  - salvage value.
210. *CSO: 1D1f LOS: 1D1j*  
In a production process where joint products are produced, the **primary** factor that will distinguish a joint product from a by-product is the
- relative total sales value of the products.
  - relative total volume of the products.
  - relative ease of selling the products.
  - accounting method used to allocate joint costs.
211. *CSO: 1D1f LOS: 1D1l*  
All of the following are methods of allocating joint costs to joint products **except**
- physical quantities method.
  - net realizable value method.
  - separable production cost method.
  - gross market value method.

212. CSO: 1D1f LOS: 1D1I

Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. Big can be processed further into 600 gallons of Giant if \$1,000 of additional processing costs are incurred. Giant can be sold for \$17 per gallon. If the net-realizable-value method were used to allocate costs to the joint products, the total cost of producing Giant would be

- a. \$5,600.
- b. \$5,564.
- c. \$5,520.
- d. \$4,600.

213. CSO: 1D1f LOS: 1D1I

Tucariz Company processes Duo into two joint products, Big and Mini. Duo is purchased in 1,000 gallon drums for \$2,000. Processing costs are \$3,000 to process the 1,000 gallons of Duo into 800 gallons of Big and 200 gallons of Mini. The selling price is \$9 per gallon for Big and \$4 per gallon for Mini. If the sales value at splitoff method is used to allocate joint costs to the final products, the per gallon cost (rounded to the nearest cent) of producing Big is

- a. \$5.63 per gallon.
- b. \$5.00 per gallon.
- c. \$4.50 per gallon.
- d. \$3.38 per gallon.

214. CSO: 1D1f LOS: 1D1I

Tempo Company produces three products from a joint process. The three products are sold after further processing as there is no market for any of the products at the split-off point. Joint costs per batch are \$315,000. Other product information is shown below.

	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>
Units produced per batch	20,000	30,000	50,000
Further processing and marketing cost per unit	\$ .70	\$3.00	\$1.72
Final sales value per unit	5.00	6.00	7.00

If Tempo uses the net realizable value method of allocating joint costs, how much of the joint costs will be allocated to each unit of Product C?

- a. \$2.10.
- b. \$2.65.
- c. \$3.15.
- d. \$3.78.

215. CSO: 1D1f LOS: 1D1l

Fitzpatrick Corporation uses a joint manufacturing process in the production of two products, Gummo and Xylo. Each batch in the joint manufacturing process yields 5,000 pounds of an intermediate material, Valdene, at a cost of \$20,000. Each batch of Gummo uses 60% of the Valdene and incurs \$10,000 of separate costs. The resulting 3,000 pounds of Gummo sells for \$10 per pound. The remaining Valdene is used in the production of Xylo which incurs \$12,000 of separable costs per batch. Each batch of Xylo yields 2,000 pounds and sells for \$12 per pound. Fitzpatrick uses the net realizable value method to allocate the joint material costs. The company is debating whether or not to process Xylo further into a new product, Zinten, which would incur an additional \$4,000 in costs and sell for \$15 per pound. If Zinten is produced, income would increase by

- a. \$2,000.
- b. \$5,760.
- c. \$14,000.
- d. \$26,000.

216. CSO: 1D2a LOS: 1D2c

Darden Manufacturing, a calendar-year corporation, had \$17,000 of spoilage during April that production management characterized as abnormal. The spoilage was incurred on Job No. 532, that was sold three months later for \$459,000. Which of the following correctly describes the impact of the spoilage on Darden's unit manufacturing cost for Job No. 532 and on the year's operating income?

- |    | <u>Unit Manufacturing Cost</u> | <u>Operating Income</u>          |
|----|--------------------------------|----------------------------------|
| a. | Increase.                      | No effect.                       |
| b. | Increase.                      | Decrease.                        |
| c. | No effect.                     | Decrease.                        |
| d. | No effect.                     | Not enough information to judge. |

217. CSO: 1D2a LOS: 1D2b

Baldwin Printing Company uses a job order costing system and applies overhead based on machine hours. A total of 150,000 machine hours have been budgeted for the year. During the year, an order for 1,000 units was completed and incurred the following.

Direct material costs	\$1,000
Direct labor costs	1,500
Actual overhead	1,980
Machine hours	450

The accountant calculated the inventory cost of this order to be \$4.30 per unit. The annual budgeted overhead in dollars was

- a. \$577,500.
- b. \$600,000.
- c. \$645,000.
- d. \$660,000.

218. CSO: 1D2a LOS: 1D2b

John Sheng, cost accountant at Starlet Company, is developing departmental factory overhead application rates for the company's tooling and fabricating departments. The budgeted overhead for each department and the data for one job are shown below.

	<u>Departments</u>	
	<u>Tooling</u>	<u>Fabricating</u>
Supplies	\$ 850	\$ 200
Supervisors' salaries	1,500	2,000
Indirect labor	1,200	4,880
Depreciation	1,000	5,500
Repairs	<u>4,075</u>	<u>3,540</u>
Total budgeted overhead	<u>\$8,625</u>	<u>\$16,120</u>
Total direct labor hours	460	620
Direct labor hours on Job #231	12	3

Using the departmental overhead application rates, total overhead applied to Job #231 in the Tooling and Fabricating Departments will be

- a. \$225.
- b. \$303.
- c. \$537.
- d. \$671.

219. CSO: 1D2b LOS: 1D2b

Mack Inc. uses a weighted-average process costing system. Direct materials and conversion costs are incurred evenly during the production process. During the month of October, the following costs were incurred.

Direct materials	\$39,700
Conversion costs	70,000

The work-in-process inventory as of October 1 consisted of 5,000 units, valued at \$4,300, that were 20% complete. During October, 27,000 units were transferred out. Inventory as of October 31 consisted of 3,000 units that were 50% complete. The weighted-average inventory cost per unit completed in October was

- a. \$3.51.
- b. \$3.88.
- c. \$3.99.
- d. \$4.00.

220. CSO: 1D2b LOS: 1D2b

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

Production Flow	Physical Units
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method. The total raw material costs in the ending work-in-process inventory for December is

- a. \$120.
- b. \$72.
- c. \$60.
- d. \$36.



221. CSO: 1D2b LOS: 1D2c

A company that uses a process costing system inspects its goods at the 60% stage of completion. If the firm's ending work-in-process inventory is 80% complete, how would the firm account for its normal and abnormal spoilage?

- a. Both normal and abnormal spoilage costs would be added to the cost of the good units completed during the period.
- b. Both normal and abnormal spoilage costs would be written off as an expense of the period.
- c. Normal spoilage costs would be added to the cost of the good units completed during the period; in contrast, abnormal spoilage costs would be written off as a loss.
- d. Normal spoilage costs would be allocated between the cost of good units completed during the period and the ending work-in-process inventory. In contrast, abnormal spoilage costs would be written off as a loss.

222. CSO: 1D2b LOS: 1D2c

When considering normal and abnormal spoilage, which one of the following is theoretically the **best** accounting method for spoilage in a process-costing system?

- a. Both normal and abnormal spoilage cost should be charged to a separate expense account.
- b. Normal spoilage cost should be charged to good units and abnormal spoilage cost should be charged to a separate expense account.
- c. Both normal and abnormal spoilage costs should be charged to good units.
- d. Normal spoilage costs should be charged to a separate expense account and abnormal spoilage cost should be charged to good units.

223. CSO: 1D2b LOS: 1D2b

Southwood Industries uses a process costing system and inspects its goods at the end of manufacturing. The inspection as of June 30 revealed the following information for the month of June.

Good units completed	16,000
Normal spoilage (units)	300
Abnormal spoilage (units)	100

Unit costs were: materials, \$3.50; and conversion costs, \$6.00. The number of units that Southwood would transfer to its finished goods inventory and the related cost of these units are

	<u>Units Transferred</u>	<u>Cost</u>
a.	16,000	\$152,000.
b.	16,000	\$154,850.
c.	16,000	\$155,800.
d.	16,300	\$154,850.

224. CSO: 1D2b LOS: 1D2f

Colt Company uses a weighted-average process cost system to account for the cost of producing a chemical compound. As part of production, Material B is added when the goods are 80% complete. Beginning work-in-process inventory for the current month was 20,000 units, 90% complete. During the month, 70,000 units were started in process, and 65,000 units were completed. There were no lost or spoiled units. If the ending inventory was 60% complete, the total equivalent units for Material B for the month was

- a. 65,000 units.
- b. 70,000 units.
- c. 85,000 units.
- d. 90,000 units.

225. CSO: 1D2b LOS: 1D2b

Oster Manufacturing uses a weighted-average process costing system and has the following costs and activity during October.

Materials	\$40,000
Conversion cost	<u>32,500</u>
Total beginning work-in-process inventory	<u>\$72,500</u>

Materials	\$ 700,000
Conversion cost	<u>617,500</u>
Total production costs - October	<u>\$1,317,500</u>

Production completed	60,000 units
Work-in-process, October 31	20,000 units

All materials are introduced at the start of the manufacturing process, and conversion cost is incurred uniformly throughout production. Conversations with plant personnel reveal that, on average, month-end in-process inventory is 25% complete. Assuming no spoilage, how should Oster's October manufacturing cost be assigned?

	<u>Production Completed</u>	<u>Work-in-Process</u>
a.	\$1,042,500	\$347,500.
b.	\$1,095,000	\$222,500.
c.	\$1,155,000	\$235,000.
d.	\$1,283,077	\$106,923.

226. CSO: 1D2b LOS: 1D2f

San Jose Inc. uses a weighted-average process costing system. All materials are introduced at the start of manufacturing, and conversion cost is incurred evenly throughout production. The company started 70,000 units during May and had the following work-in-process inventories at the beginning and end of the month.

May 1	30,000 units, 40% complete
May 31	24,000 units, 25% complete

Assuming no spoilage or defective units, the total equivalent units used to assign costs for May are

	<u>Materials</u>	<u>Conversion Cost</u>
a.	70,000	70,000.
b.	82,000	82,000.
c.	100,000	70,000.
d.	100,000	82,000.

227. CSO: 1D2b LOS: 1D2b

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

<u>Production Flow</u>	<u>Physical Units</u>
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the weighted-average process-costing method. The total conversion cost assigned to units transferred to the next department in December was

- a. \$1,664.
- b. \$1,600.
- c. \$1,513.
- d. \$1,484.

228. CSO: 1D2b LOS: 1D2f

During December, Krause Chemical Company had the following selected data concerning the manufacture of Xyzine, an industrial cleaner.

<u>Production Flow</u>	<u>Physical Units</u>
Completed and transferred to the next department	100
Add: Ending work-in-process inventory	<u>10</u> (40% complete as to conversion)
Total units to account for	110
Less: Beginning work-in-process inventory	<u>20</u> (60% complete as to conversion)
Units started during December	<u>90</u>

All material is added at the beginning of processing in this department, and conversion costs are added uniformly during the process. The beginning work-in-process inventory had \$120 of raw material and \$180 of conversion costs incurred. Material added during December was \$540 and conversion costs of \$1,484 were incurred. Krause uses the first-in, first-out (FIFO) process-costing method. The equivalent units of production used to calculate conversion costs for December was

- a. 110 units.
- b. 104 units.
- c. 100 units.
- d. 92 units.

229. CSO: 1D2b LOS: 1D2f

Jones Corporation uses a first-in, first-out (FIFO) process costing system. Jones has the following unit information for the month of August.

	<u>Units</u>
Beginning work-in-process inventory, 100% complete for materials, 75% complete for conversion cost	10,000
Units completed and transferred out	90,000
Ending work-in-process inventory, 100% complete for materials, 60% complete for conversion costs	8,000

The number of equivalent units of production for conversion costs for the month of August is

- a. 87,300.
- b. 88,000.
- c. 92,300.
- d. 92,700.

230. CSO: 1D2b LOS: 1D2f

Waller Co. uses a weighted-average process-costing system. Material B is added at two different points in the production of shirms, 40% is added when the units are 20% completed, and the remaining 60% of Material B is added when the units are 80% completed. At the end of the quarter, there are 22,000 shirms in process, all of which are 50% completed. With respect to Material B, the ending shirms in process represent how many equivalent units?

- a. 4,400 units.
- b. 8,800 units.
- c. 11,000 units.
- d. 22,000 units.

231. CSO: 1D2c LOS: 1D2a

When using activity-based costing techniques, which one of the following departmental activities would be expected to use machine hours as a cost driver to allocate overhead costs to production?

- a. Plant cafeteria.
- b. Machine setups.
- c. Material handling.
- d. Robotics painting.

232. CSO: 1D2c LOS: 1D2a

A company is considering the implementation of an activity-based costing and management program. The company

- a. should focus on manufacturing activities and avoid implementation with service-type functions.
- b. would probably find a lack of software in the marketplace to assist with the related recordkeeping.
- c. would normally gain added insights into causes of cost.
- d. would likely use fewer cost pools than it did under more traditional accounting methods.

233. CSO: 1D2c LOS: 1D2a

All of the following are likely to be used as a cost allocation base in activity-based costing **except** the

- a. number of different materials used to manufacture the product.
- b. units of materials used to manufacture the product.
- c. number of vendors supplying the materials used to manufacture the product.
- d. cost of materials used to manufacture the product.

234. CSO: 1D2c LOS: 1D2h

Pelder Products Company manufactures two types of engineering diagnostic equipment used in construction. The two products are based upon different technologies, x-ray and ultra-sound, but are manufactured in the same factory. Pelder has computed the manufacturing cost of the x-ray and ultra-sound products by adding together direct materials, direct labor, and overhead cost applied based on the number of direct labor hours. The factory has three overhead departments that support the single production line that makes both products. Budgeted overhead spending for the departments is as follows.

<u>Department</u>			<u>Total</u>
<u>Engineering design</u>	<u>Material handling</u>	<u>Setup</u>	
\$6,000	\$5,000	\$3,000	<u>\$14,000</u>

Pelder's budgeted manufacturing activities and costs for the period are as follows.

<u>Activity</u>	<u>Product</u>	
	<u>X-Ray</u>	<u>Ultra-Sound</u>
Units produced and sold	50	100
Direct materials used	\$5,000	\$8,000
Direct labor hours used	100	300
Direct labor cost	\$4,000	\$12,000
Number of parts used	400	600
Number of engineering changes	2	1
Number of product setups	8	7

The budgeted cost to manufacture one ultra-sound machine using the activity-based costing method is

- a. \$225.
- b. \$264.
- c. \$293.
- d. \$305.



235. CSO: 1D2c LOS: 1D2h

The Chocolate Baker specializes in chocolate baked goods. The firm has long assessed the profitability of a product line by comparing revenues to the cost of goods sold. However, Barry White, the firm's new accountant, wants to use an activity-based costing system that takes into consideration the cost of the delivery person. Listed below are activity and cost information relating to two of Chocolate Baker's major products.

	<u>Muffins</u>	<u>Cheesecake</u>
Revenue	\$53,000	\$46,000
Cost of goods sold	26,000	21,000
<u>Delivery Activity</u>		
Number of deliveries	150	85
Average length of delivery	10 Minutes	15 Minutes
Cost per hour for delivery	\$20.00	\$20.00

Using activity-based costing, which one of the following statements is **correct**?

- a. The muffins are \$2,000 more profitable.
- b. The cheesecakes are \$75 more profitable.
- c. The muffins are \$1,925 more profitable.
- d. The muffins have a higher profitability as a percentage of sales and, therefore, are more advantageous.

236. CSO: 1D2c LOS: 1D2h

Atmel Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$ 450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead costs	<u>\$ 975,000</u>

Using activity-based costing, the per unit overhead cost allocation of receiving costs for product A is

- a. \$3.75.
- b. \$10.75.
- c. \$19.50.
- d. \$28.13.

237. CSO: 1D2c LOS: 1D2h

A profitable company with five departments uses plantwide overhead rates for its highly diversified operation. The firm is studying a change to either allocating overhead by using departmental rates or using activity-based costing (ABC). Which one of these two methods will likely result in the use of a greater number of cost allocation bases and more accurate costing results?

	<u>Greater Number of Allocation Bases</u>	<u>More Accurate Costing Results</u>
a.	Departmental	Departmental.
b.	Departmental	ABC.
c.	ABC	Departmental.
d.	ABC	ABC.

238. *CSO: 1D3a LOS: 1D3e*  
In practice, items such as wood screws and glue used in the production of school desks and chairs would **most** likely be classified as
- a. direct labor.
  - b. factory overhead.
  - c. direct materials.
  - d. period costs.
239. *CSO: 1D3b LOS: 1D3c*  
Young Company is beginning operations, and is considering three alternative ways in which to allocate manufacturing overhead to individual units produced. Young can use a plantwide rate, departmental rates, or activity based costing. Young will produce many types of products in its single plant, and not all products will be processed through all departments. In which one of the following independent situations would reported net income for the first year be the same regardless of which overhead allocation method had been selected?
- a. All production costs approach those costs that were budgeted.
  - b. The sales mix does not vary from the mix that was budgeted.
  - c. All manufacturing overhead is a fixed cost.
  - d. All ending inventory balances are zero.
240. *CSO: 1D3b LOS: 1D3d*  
The **most** important criterion in accurate cost allocations is
- a. using a simple allocation method.
  - b. allocating fixed and variable costs by using the same allocation base.
  - c. using homogeneous cost pools.
  - d. using multiple drivers for each cost pool.

241. CSO: 1D3b LOS: 1D3g

Cynthia Rogers, the cost accountant for Sanford Manufacturing, is preparing a management report which must include an allocation of overhead. The budgeted overhead for each department and the data for one job are shown below.

	<u>Department</u>		
	<u>Tooling</u>	<u>Fabricating</u>	
Supplies	\$ 690	\$ 80	
Supervisor's salaries	1,400	1,800	
Indirect labor	1,000	4,000	
Depreciation	1,200	5,200	
Repairs	4,400	3,000	
Total budgeted overhead	<u>\$8,690</u>	<u>\$14,080</u>	1D3d
Total direct labor hours	440	640	
Direct labor hours on Job #231	10	2	

Using the departmental overhead application rates, and allocating overhead on the basis of direct labor hours, overhead applied to Job #231 in the Tooling Department would be

- a. \$44.00
- b. \$197.50
- c. \$241.50
- d. \$501.00.

242. CSO: 1D3b LOS: 1D3g

Patterson Corporation expects to incur \$70,000 of factory overhead and \$60,000 of general and administrative costs next year. Direct labor costs at \$5 per hour are expected to total \$50,000. If factory overhead is to be applied per direct labor hour, how much overhead will be applied to a job incurring 20 hours of direct labor?

- a. \$28.
- b. \$120.
- c. \$140.
- d. \$260.

243. CSO: 1D3c LOS: 1D3f

Henry Manufacturing, which uses direct labor hours to apply overhead to its product line, undertook an extensive renovation and modernization program two years ago. Manufacturing processes were reengineered, considerable automated equipment was acquired, and 60% of the company's nonunion factory workers were terminated.

Which of the following statements would apply to the situation at Henry?

- I. The company's factory overhead rate has likely increased.
- II. The use of direct labor hours seems to be appropriate.
- III. Henry will lack the ability to properly determine labor variances.
- IV. Henry has likely reduced its ability to quickly cut costs in order to respond to economic downturns.

- a. I, II, III, and IV.
- b. I and IV only.
- c. II and IV only.
- d. I and III only.

244. CSO: 1D3c LOS: 1D3h

Jones Tax Company has three divisions - Compliance, Tax Planning, and Financial Consulting. Based on the divisional data presented below, which one of the allocation bases for common company expenses would likely have the **least** negative behavioral impact on the Financial Consulting Division manager?

	<u>Compliance</u>	<u>Tax Planning</u>	<u>Financial Consulting</u>
Revenues	\$4,500,000	\$6,000,000	\$4,500,000
Variable expenses	1,500,000	3,750,000	2,250,000
No. of employees	68	76	56

- a. Revenues.
- b. Contribution margin.
- c. Equal sharing.
- d. Number of employees.

245. CSO: 1D3c LOS: 1D3g

Atmel Inc. manufactures and sells two products. Data with regard to these products are given below.

	<u>Product A</u>	<u>Product B</u>
Units produced and sold	30,000	12,000
Machine hours required per unit	2	3
Receiving orders per product line	50	150
Production orders per product line	12	18
Production runs	8	12
Inspections	20	30

Total budgeted machine hours are 100,000. The budgeted overhead costs are shown below.

Receiving costs	\$450,000
Engineering costs	300,000
Machine setup costs	25,000
Inspection costs	<u>200,000</u>
Total budgeted overhead	<u>\$975,000</u>

The cost driver for engineering costs is the number of production orders per product line. Using activity-based costing, the engineering cost per unit for Product B would be

- \$4.00.
- \$10.00.
- \$15.00.
- \$29.25.

246. CSO: 1D3d LOS: 1D3p

When allocating costs from one department to another, a dual-rate cost-allocation method may be used. The dual-rate cost-allocation method is **most** useful when

- two or more cost pools are to be allocated.
- two or more departments' costs are to be allocated.
- two or more products are produced.
- costs are separated into variable-cost and fixed-cost subpools.

247. CSO: 1D3d LOS: 1D3p

The management of ROX Company wishes to encourage all other departments to use the legal department, as circumstances warrant. To accomplish this, legal department costs should be

- allocated to users on the basis of the actual cost of hours used.
- allocated to users on the basis of the budgeted cost of actual hours used.
- allocated to users on the basis of standard cost for the type of service provided.
- absorbed as a corporate expense.

248. CSO: 1D3d LOS: 1D3o

Boston Furniture Company manufactures several steel products. It has three production departments, Fabricating, Assembly, and Finishing. The service departments include Maintenance, Material Handling, and Designing. Currently, the company does not allocate service department costs to the production departments. John Baker, who has recently joined the company as the new cost accountant, believes that service department rates should be developed and charged to the production departments for services requested. If the company adopts this new policy, the production department managers would be **least** likely to

- a. request an excessive amount of service.
- b. replace outdated and inefficient systems.
- c. refrain from using necessary services.
- d. be encouraged to control costs.

249. CSO: 1D3d LOS: 1D3p

Cotton Company has two service departments and three operating departments. In allocating service department costs to the operating departments, which of the following three methods (direct, step-down, reciprocal) will result in the same amount of service department costs being allocated to each operating department, regardless of the order in which the service department costs are allocated?

- a. Direct and reciprocal methods only.
- b. Step-down and reciprocal methods only.
- c. Direct and step-down methods only.
- d. Direct method only.

250. CSO: 1D3d LOS: 1D3p

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the Information Systems Department. Which one of the following departmental allocations is present in the reciprocal method of departmental allocation? The costs of the

- a. Assembly Department are allocated to the Information Systems Department and the Personnel Department.
- b. Information Systems Department are allocated to the Machining Department and the costs of the Machining Department are allocated to the Assembly Department.
- c. Personnel Department are allocated solely to the Information Systems Department.
- d. Information Systems Department are allocated to the Personnel Department, Machining Department, and Assembly Department.

251. *CSO: 1D3d LOS: 1D3p*

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than the Information Systems Department. If Wilcox uses the step-down method of departmental allocation, which one of the following cost allocations would **not** occur? Some of the costs of the

- a. Personnel Department would be allocated to the Information Systems Department.
- b. Information Systems Department would be allocated to the Personnel Department.
- c. Personnel Department would be allocated to the Assembly Department.
- d. Personnel Department would be allocated to the Assembly Department and the Machining Department.

252. *CSO: 1D3d LOS: 1D3p*

Render Inc. has four support departments (maintenance, power, human resources, and legal) and three operating departments. The support departments provide services to the operating departments as well as to the other support departments. The method of allocating the costs of the support departments that **best** recognizes the mutual services rendered by support departments to other support departments is the

- a. direct allocation method.
- b. dual-rate allocation method.
- c. step-down allocation method.
- d. reciprocal allocation method.



253. CSO: 1D3d LOS: 1D3p

Logo Inc. has two data services departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows.

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
		<u>9,300</u>	<u>11,600</u>

If Logo employs the direct method of allocating service department costs, the overhead of the Systems Department would be allocated by dividing the overhead amount by

- 1,200 hours.
- 8,100 hours.
- 9,000 hours.
- 9,300 hours.

254. CSO: 1D3d LOS: 1D3p

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year.

	<u>Support Departments</u>		<u>Operating Departments</u>		<u>Total</u>
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work furnished					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

If Adam uses the step-down method, beginning with the Maintenance Department, to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- \$415,526.
- \$422,750.
- \$442,053.
- \$445,000.

255. CSO: 1D3d LOS: 1D3p

Wilcox Industrial has two support departments, the Information Systems Department and the Personnel Department, and two manufacturing departments, the Machining Department and the Assembly Department. The support departments service each other as well as the two production departments. Company studies have shown that the Personnel Department provides support to a greater number of departments than does the Information Systems Department. If Wilcox uses the direct method of departmental allocation, which one of the following cost allocations would occur? Some of the costs of the

- Personnel Department would be allocated to the Information Systems Department.
- Machining Department would be allocated to the Information Systems Department.
- Information Systems Department would be allocated to the Assembly Department.
- Assembly Department would be allocated to the Machining Department.

256. CSO: 1D3d LOS: 1D3p

Logo Inc. has two data services departments (the Systems Department and the Facilities Department) that provide support to the company's three production departments (Machining Department, Assembly Department, and Finishing Department). The overhead costs of the Systems Department are allocated to other departments on the basis of computer usage hours. The overhead costs of the Facilities Department are allocated based on square feet occupied (in thousands). Other information pertaining to Logo is as follows.

<u>Department</u>	<u>Overhead</u>	<u>Computer Usage Hours</u>	<u>Square Feet Occupied</u>
Systems	\$200,000	300	1,000
Facilities	100,000	900	600
Machining	400,000	3,600	2,000
Assembly	550,000	1,800	3,000
Finishing	620,000	<u>2,700</u>	<u>5,000</u>
		<u>9,300</u>	<u>11,600</u>

Logo employs the step-down method of allocating service department costs and begins with the Systems Department. Which one of the following correctly denotes the amount of the Systems Department's overhead that would be allocated to the Facilities Department and the Facilities Department's overhead charges that would be allocated to the Machining Department?

- |    | <u>Systems to Facilities</u> | <u>Facilities to Machining</u> |
|----|------------------------------|--------------------------------|
| a. | \$0                          | \$20,000.                      |
| b. | \$19,355                     | \$20,578.                      |
| c. | \$20,000                     | \$20,000.                      |
| d. | \$20,000                     | \$24,000.                      |

257. CSO: 1D3d LOS: 1D3p

Adam Corporation manufactures computer tables and has the following budgeted indirect manufacturing cost information for next year.

	<u>Support Departments</u>		<u>Operating Departments</u>		
	<u>Maintenance</u>	<u>Systems</u>	<u>Machining</u>	<u>Fabrication</u>	<u>Total</u>
Budgeted overhead	\$360,000	\$95,000	\$200,000	\$300,000	\$955,000
Support work furnished					
From Maintenance		10%	50%	40%	100%
From Systems	5%		45%	50%	100%

If Adam uses the direct method to allocate support department costs to production departments, the total overhead (rounded to the nearest dollar) for the Machining Department to allocate to its products would be

- a. \$418,000.
- b. \$422,750.
- c. \$442,053.
- d. \$445,000.

258. CSO: 1D4a LOS: 1D4e

Presario Inc. recently installed just-in-time production and purchasing systems. If Presario's experience is similar to that of other companies, Presario will likely

- a. reduce the number of suppliers with which it does business.
- b. increase the size of individual orders of raw materials.
- c. increase the dollar investment in finished goods inventory.
- d. be less reliant on sales orders as a "trigger" mechanism for production runs.

259. CSO: 1D4d LOS: 1D4g

According to the theory of constraints, all of the following activities help to relieve the problem of a bottleneck in operations **except**

- a. eliminating idle time at the bottleneck operation.
- b. reducing setup time at the bottleneck operation.
- c. shifting products that do not have to be made on bottleneck machines to non-bottleneck machines.
- d. increasing the efficiency of operations at non-bottleneck machines.

260. *CSO: 1D4d LOS: 1D4h*  
 When demand for a product or products exceeds production capacity, which one of the following is the first step that managers should take?
- Spend money to eliminate the bottleneck.
  - Focus their efforts on constraint identification.
  - Change the throughput of operations.
  - Apply activity-based management to solve the problem.

261. *CSO: 1D5a LOS: 1D5c*  
 A company desires to prepare two sets of financial statements. Conventional financial statements would be prepared along with a set that is totally consistent with value-chain analysis. How would customer service costs be treated in the two statements?

	<u>Conventional Financial Statements</u>	<u>Value-Chain Financial Statements</u>
a.	Inventoriable cost	Product cost.
b.	Inventoriable cost	Non-product cost.
c.	Noninventoriable cost	Product cost.
d.	Noninventoriable cost	Non-product cost.

262. *CSO: 1D5a LOS: 1D5b*  
 Which one of the following lists of functions is in proper value chain order?
- Research and development, marketing, and customer services.
  - Production, marketing, and production design.
  - Production design, distribution, and marketing.
  - Research and development, customer service, and distribution.

263. *CSO: 1D5b LOS: 1D5d*  
 Consider the following manufacturing-related activities.

- Conducting the final assembly of wooden furniture.
- Moving completed production to the finished goods warehouse.
- Painting newly-manufactured automobiles.
- Setting up a machine related to a new production run.
- Reworking defective goods to bring them up to quality standards.

The activities that would be classified as value-added activities are

- II, III, IV, and V only.
- I, IV, and V only.
- I, III, and V only.
- I and III only.

264. CSO: 1D5c LOS: 1D5e

From the perspective of the management accountant, which one of the following represents a **major** disadvantage of business process reengineering?

- a. The focus is, to a large extent, on short-term results.
- b. It often results in a decreased use of centralized data bases.
- c. Internal control mechanisms are often disassembled.
- d. It results in heavier maintenance for legacy systems.

265. CSO: 1D5f LOS: 1D5h

Retail Partners Inc., which operates eight discount store chains, is seeking to reduce the costs of its purchasing activities through reengineering and a heavier use of electronic data interchange (EDI). Which of the following benchmarking techniques would be appropriate in this situation?

- I. A comparison of the purchasing costs and practices of each of Retail Partners' store chains to identify their internal "best in class."
- II. A comparison of the practices of Retail Partners to those of Discount City, another retailer, whose practices are often considered "best in class."
- III. A comparison of the practices of Retail Partners to those of Capital Airways, an international airline, whose practices are often considered "best in class."
- IV. An in-depth review of a retail trade association publication on successful electronic data interchange applications.

- a. II and IV only.
- b. I and II only.
- c. I and IV only.
- d. I, II, III, and IV.

266. CSO: 1D5f LOS: 1D5h

All of the following are examples of benchmarking standards **except**

- a. the performance of the unit during the previous year.
- b. the best performance of the unit in comparable past periods.
- c. a comparison with a similar unit within the same company.
- d. the best performance of a competitor with a similar operation.

267. CSO: 1D5g LOS: 1D5m

Leese Inc. has the following quality financial data for its most recent fiscal year.

Rework costs	\$110,000
Warranty repair costs	280,000
Product line inspection	95,000
Design engineering	300,000
Supplier evaluation	240,000
Labor training	150,000
Product testing	65,000
Breakdown maintenance	70,000
Product scrap	195,000
Cost of returned goods	180,000
Customer support	35,000
Product liability claims	80,000

The total amount of prevention costs that should be reported in a Cost of Quality report for the year is

- a. \$390,000.
- b. \$450,000.
- c. \$690,000.
- d. \$755,000.

268. CSO: 1D5g LOS: 1D5l

When measuring the cost of quality, the cost of inspecting incoming raw materials is a(n)

- a. prevention cost.
- b. appraisal cost.
- c. internal failure cost.
- d. external failure cost.

269. CSO: 1D5g LOS: 1D5l

In measuring the cost of quality, which one of the following is considered an appraisal cost?

- a. Rework cost.
- b. Product testing cost.
- c. Warranty claims cost.
- d. Equipment maintenance cost.

270. CSO: 1D5g LOS: 1D5l

External failure costs include all of the following costs **except** those related to

- a. lost sales and lost customers.
- b. warranty obligations.
- c. product liability suits.
- d. product field testing.

271. CSO: 1D5g LOS: 1D5l

When evaluating the cost of quality in an organization, which one of the following would be considered an internal failure cost?

- a. The cost to rework defective units.
- b. The cost to inspect units produced.
- c. The warranty repair costs.
- d. Product testing.

### Section E: Internal Controls

272. CSO: 1E1a LOS: 1E1b

When assessing a company's internal control structure policies and procedures, the primary consideration is whether they

- a. prevent management override.
- b. relate to the control environment.
- c. reflect management's philosophy and operating style.
- d. affect the financial statement assertions.

273. CSO: 1E1b LOS: 1E1g

The basic concepts implicit in internal accounting controls include the following.

- The cost of the system should not exceed benefits expected to be attained.
- The overall impact of the control procedure should not hinder operating efficiency.

Which one of the following recognizes these two factors?

- a. Limitations.
- b. Management responsibility.
- c. Methods of data processing.
- d. Reasonable assurance.

274. CSO: 1E1b LOS: 1E1j

Which one of the following functions performed in an organization is a violation of internal control?

- a. A mail clerk opening the mail compares the check received with the source document accompanying the payment, noting the amount paid, then forwards the checks daily (along with a listing of the cash receipts) to the Cashier for deposit.
- b. A mail clerk opening the mail compares the check received with the source document accompanying the payment, noting the amount paid, then forwards the source documents that accompany the payments (along with a listing of the cash receipts) to Accounts Receivable, on a daily basis, for posting to the subsidiary ledger.
- c. At the end of the week the Cashier prepares a deposit slip for all of the cash receipts received during the week.
- d. The General Ledger clerk compares the summary journal entry, received from the Cashier for cash receipts applicable to outstanding accounts, with the batch total for posting to the Subsidiary Ledger by the Accounts Receivable clerk.

275. CSO: ED1b LOS: 1E1i

In order to properly segregate duties, which function within the computer department should be responsible for reprocessing the errors detected during the processing of data?

- a. Department manager.
- b. Systems analyst.
- c. Computer programmer.
- d. Data control group.

276. CSO: 1E1b LOS: 1E1i

Which one of the following methods, for the distribution of employees' paychecks, would provide the **best** internal control for the organization?

- a. Delivery of the paychecks to each department supervisor, who in turn would distribute paychecks directly to the employees in his/her department.
- b. Direct deposit in each employee's personal bank account.
- c. Distribution of paychecks directly to each employee by a representative of the Human Resource department.
- d. Distribution of paychecks directly to each employee by the payroll manager.



277. CSO: 1E1b LOS: 1E1g

Which one of the following would be **most** effective in deterring the commission of fraud?

- a. Policies of strong internal control, segregation of duties, and requiring employees to take vacations.
- b. Policies of strong internal control and punishments for unethical behavior.
- c. Employee training, segregation of duties, and punishment for unethical behavior.
- d. Hiring ethical employees, employee training, and segregation of duties.

278. CSO: 1E1a LOS: 1E1t

A public corporation that must meet the provisions of the Foreign Corrupt Practices Act of 1977 should have a compliance program that includes all of the following steps **except**

- a. an authorized and properly signed agreement that it will abide by the Act.
- b. documentation of the corporation's existing internal accounting control systems.
- c. a cost/benefit analysis of the controls and the risks that are being minimized.
- d. a system of quality checks to evaluate the internal accounting control system.

279. CSO: 1E1a LOS: 1E1t

The principal impetus for the enactment of the Foreign Corrupt Act by the U.S. Congress was to

- a. discourage unethical behavior by foreigners employed by U.S. firms.
- b. promote the mandates issued by the United Nations with regard to global trade between its member nations.
- c. prevent the bribery of foreign officials by U.S. firms seeking to do business overseas.
- d. require mandatory documentation of the evaluation of internal controls by the independent auditors.

280. CSO: 1E2a LOS: 1E2a

Which one of the following statements, regarding internal auditing responsibility and authority, is **incorrect**?

- a. Internal auditors are expected to comply with standards of professional conduct.
- b. The understandability of audit reports is the responsibility of internal auditors.
- c. Follow-up on actions noted in audit findings is not required of internal auditors.
- d. Internal auditors are responsible to service the organization.

281. CSO: 1E2a LOS: 1E2b

Which one of the following accounting and management techniques is **least** likely to assist internal auditors in appraising the efficiency with which resources are being used by respective profit centers?

- a. Cost Variance Analysis.
- b. Flexible Budgets.
- c. Activity-based management.
- d. Joint cost allocations.

282. CSO: 1E2b LOS: 1E2e

If a corporation may be violating federal and state laws governing environmental concerns, which one of the following types of audit will **best** assist in ascertaining whether such situations may exist?

- a. Operational audit.
- b. Compliance Audit.
- c. Financial audit.
- d. Management Audit.

283. CSO: 1E2b LOS: 1E2e

Which one of the following types of audits would be **most** likely to focus on objectives related to the efficient use of resources?

- a. Compliance audit.
- b. Information systems audit.
- c. Independent audit.
- d. Operational audit.

284. CSO: 1E2b LOS: 1E2e

When an internal auditor expresses an opinion as to the efficiency and effectiveness of an entity's activities and makes recommendations for improvements, the auditor is conducting a(n)

- a. financial statement audit of a public company.
- b. financial statement audit of a municipality.
- c. compliance audit.
- d. operational audit.

285. CSO: 1E3a LOS: 1E3b

A computer virus is different from a “Trojan Horse” because the virus can

- a. corrupt data.
- b. alter programming instructions.
- c. replicate itself.
- d. erase executable files.

286. CSO: 1E3a LOS: 1E3c

In situations where it is crucial that data be entered correctly into an accounting information system, the **best** method of data control would be to use

- a. key verification.
- b. compatibility tests.
- c. limit checks.
- d. reasonableness tests.

287. CSO: 1E3b LOS: 1E3c

The **most** appropriate control to verify that a user is authorized to execute a particular on-line transaction is a

- a. password.
- b. challenge/response system.
- c. compatibility check.
- d. closed-loop verification.

288. CSO: 1E3c LOS: 1E3d

In securing the client/server environment of an information system, a principal disadvantage of using a single level sign-on password is the danger of creating a(n)

- a. trap door entry point.
- b. single point of failure.
- c. administrative bottleneck.
- d. lock-out of valid users.

289. CSO: IE3c LOS: IE3e

Which one of the following represents a weakness in the internal control system of an electronic data processing system?

- a. The data control group reviews and tests procedures and handles the reprocessing of errors detected by the computer.
- b. The accounts receivable clerk prepares and enters data into the computer system and reviews the output for errors.
- c. The systems analyst designs new systems and supervises testing of the system.
- d. The computer operator executes programs according to operating instructions and maintains custody of programs and data files.

290. CSO: IE3c LOS: IE3i

Confidential data can be securely transmitted over the internet by using

- a. single-use passwords.
- b. firewalls.
- c. encryption.
- d. digital signatures.

291. CSO: IE3c LOS: IE3i

All of the following are examples of encryption techniques used for computer security **except**

- a. public key.
- b. private key.
- c. primary key.
- d. authentication key.

292. CSO: 1E3a LOS: 1E3k

The data entry staff of National Manufacturing Inc. has responsibility for converting all of the plant's shipping information to computerized records. The information flow begins when the shipping department sends a copy of a shipping order to the data entry staff. A data entry operator scans the shipping order information onto a hand-held data storage device. Verification clerks then check the computerized record with the original shipping orders. When a given batch of files has been reviewed and corrected, as necessary, the information is uploaded to the company's mainframe system at the home office.

The **most** effective way to visualize and understand this set of activities would be through the use of a

- a. program flowchart.
- b. decision table.
- c. document flowchart.
- d. Gantt chart.

293. CSO: 1E3e LOS: 1E3n

When attempting to restore computing facilities at an alternate site following a disaster, which one of the following should be restored first?

- a. Online system.
- b. Batch system.
- c. Operating system.
- d. Decision support system.

# CMA Part 1 – Financial Reporting, Planning, Performance, and Control

## Answers to Examination Practice Questions

### Section A: External Financial Reporting Decisions

1. Correct answer d. The annual report to shareholders is prepared in accordance with generally accepted accounting principles and is designed to provide information that is pertinent to investors and other external users. Managers responsible for operating activities use internal reports designed to provide information about various aspects of internal functions that measure the effectiveness and efficiency of operations.
2. Correct answer b. Decreases in current liabilities such as accounts payable and income taxes payable are deducted from net income when determining cash flow indicating that cash was used to decrease the balances in these accounts.
3. Correct answer a. Firms are required to present reconciliations of the beginning and ending balances of their shareholder accounts; this is accomplished by presenting a Statement of Shareholders' Equity.
4. Correct answer b. A company's solvency is best represented by the amount of cash that can be generated internally rather than having to borrow from outside sources. This is shown on the Cash Flow Statement as flows from operating activities.
5. Correct answer d. The Income Statement is used to determine a firm's profitability and past performance can be evaluated using prior period income statements. All of the other characteristics listed can be determined from the Statement of Financial Position.
6. Correct answer a. The purpose of the Income Statement is to provide a summary of a firm's operating activities for a period of time.
7. Correct answer c. Bertram's Cash Paid for Dividends is \$12,000 as calculated below.
$$\begin{array}{rcl} \$100,000 + \$40,000 - \$8,000 + \$5,000 - X & = & \$125,000 \\ \$137,000 - X & = & \$125,000 \\ X & = & \underline{\$12,000} \end{array}$$
8. Correct answer b. Shareholders' Equity is presented on the Statement of Financial Position (Balance Sheet) while all the other elements listed are components of the Income Statement.
9. Correct answer d. The payment of dividends is a financing activity and should be presented as a cash outflow in that section of the Cash Flow Statement.
10. Correct answer b. The Cash Flow Statement does not have an "equity activities" section; equity transactions are presented as financing activities.
11. Correct answer b. Available-for-sale securities are considered an investment, and therefore the sale would be presented as an investing activity on the statement of cash flows.

12. Correct answer d. The form of the Cash Flow Statement is prescribed as Operating Activities, Investing Activities, and Financing Activities.
13. Correct answer d. This transaction would be presented as a non-cash financing and investing activity as the full amount of the acquisition cost was mortgaged.
14. Correct answer a. Changes in current assets and current liabilities are presented as operating activities on the Cash Flow Statement. The other transactions listed are investing or financing activities.
15. Correct answer a. The quality of the earnings reported for the enterprise cannot be determined from the Income Statement and is therefore a limitation of that statement. All of the other characteristics listed refer to limitations of the Statement of Financial Position.
16. Correct answer b. The two methods used to calculate the cash flow from operating activities are the direct method and the indirect method. The indirect method is used more frequently than the direct method.
17. Correct answer a. The direct method of calculating cash flow from operating activities presents major classes of operating cash receipts less major classes of operating cash disbursements.
18. Correct answer c. The sale of a fixed asset for less than book value will decrease net profit as the loss on the sale will be recognized on the Income Statement.
19. Correct answer b. Whether a lease is treated as a capital lease or an operating lease has no effect on a firm's accounts receivable turnover. All other measures listed would be affected by the change to the recording of the lease.
20. Correct answer a. Bailey's cash inflow from operating activities is \$100,000 for goods sold to customers. The sale of receivables for \$125,000 is an investing activity while the issuance of company stock is a financing activity.
21. Correct answer a. Deltech's \$5,000 acquisition of a productive asset is an outflow for investing activities while the bank loan is an inflow for financing activities.
22. Correct answer a. Atwater's cash flow for investing activities is \$300,000 for the purchase of Trillium stock. Both the payment of dividends and the repurchase of Atwater stock are financing activities.
23. Correct answer b. The interest paid on the bank loan (\$250,000) should be included as an operating activity on Carlson's cash flow statement. The dividend payment is a financing activity and the equipment purchase is an investment activity.
24. Correct answer c. The Financing Section of Barber's Cash Flow Statement should include the dividend payment and the repurchase of Barber's stock for a total of \$600,000.

25. Correct answer b. Kristina's cash flow from financing activities should be \$720,000 (\$800,000 inflow from the issuance of common stock less the \$80,000 payment of dividends).
26. Correct answer c. Kristina's cash flow from investing activities should be \$1,300,000 (\$2,800,000 from the sale of receivables less the \$1,500,000 land acquisition).
27. Correct answer c. Doran's net cash flow from operating activities is \$1,018,000 as shown below.

Net income	\$ 920,000
Depreciation expense	+ 110,000
Increase in payables	+ 45,000
Increase in receivables	- 73,000
Increase in tax liability	+ 16,000
Cash flow	<u>\$1,018,000</u>

28. Correct answer d. James should include the total value of the sale (\$150,000) in the Investing Activities Section of the Cash Flow Statement.
29. Correct answer c. Madden's net cash flow from operating activities is \$83,000 as shown below.

Net income	\$82,000
Decrease in receivables	+ 6,000
Increase in inventory	-12,000
Depreciation expense	+20,000
Decrease in payables	- 3,000
Gain on equipment sale	-10,000
Cash flow	<u>\$83,000</u>

30. Correct answer a. Kristina's net cash flow from operating activities is \$1,700,000.

Net income	\$2,000,000
Increase in receivables	- 300,000
Decrease in inventory	+ 100,000
Increase in payables	+ 200,000
Depreciation expense	+ 400,000
Gain on securities sale	- 700,000
Cash flow	<u>\$1,700,000</u>

31. Correct answer d. A change in estimate for bad debts should be treated as affecting on the period of the change. Changes in estimates are viewed as normal recurring corrections and retrospective treatment is prohibited.
32. Correct answer b. Finer Foods' change in inventory method should be presented on a retrospective basis to maintain consistency and comparability.



## Section B: Planning, Budgeting and Forecasting

- 33. Correct answer b. Cerawell has no control over the actions of its competitors; it can only respond to these actions, e.g., increase the company's research and development efforts. Cerawell has some control over the other alternatives presented.
- 34. Correct answer d. Budget preparation forces management planning, can provide performance criteria, and promotes communication and coordination within an organization. However, a budget cannot control unauthorized expenditures – these are usually caused by weak internal controls.
- 35. Correct answer d. Participation in budget preparation at all levels promotes acceptance of budgets and allows those who have to implement plans to participate in the planning process.
- 36. Correct answer d. Those closest to operations should participate in budget development as they are most knowledgeable and can supply reliable information on which to base the budget.
- 37. Correct answer c. A budget that is not supported by top management has very little chance of success as subordinates will attach little importance to the budget and will focus on what management does consider important.
- 38. Correct answer d. One of the few advantages of top-down budgeting is that it is less time-consuming than participatory budgeting as there is little need for discussion and compromise.
- 39. Correct answer d. Standard costing traces direct costs to a cost object. As a result, standard costs are most often stated as unit costs. Budgeted costs are generally presented as total costs as one of the objectives of budgeting is to forecast the overall financial condition.
- 40. Correct answer d. The involvement of all those affected in the development of standard costs is the team development approach. The alternative answers presented generally include those who are not operationally involved.
- 41. Correct answer d. Ideal standards are those achieved under ideal working conditions and are, therefore, difficult to achieve under realistic working conditions. Practical standards are developed under actual working conditions and are, therefore, a better motivating target for manufacturing personnel.
- 42. Correct answer d. The price agreed upon by the purchasing manager and the appropriate level of company management is the most reasonable selection as it takes into consideration actual experience and future plans for requiring the component.
- 43. Correct answer d. Standards that reflect current experience are realistic and will provide the best information for decision making.
- 44. Correct answer b. The fact that Michigan's budgeting process was based on a bottom-up philosophy would indicate that standards were being set by those with operational knowledge. This is inconsistent with the consultant's findings that labor standards are too tight.

45. Correct answer c. Simple regression analysis estimates the relationship between the dependent variable and one independent variable while multiple regression analysis estimates the relationship between the dependent variable and two or more independent variables.
46. Correct answer c. Using linear regression, there are three criteria for selecting the independent variable: economic plausibility, goodness of fit, and the slope of the regression line.
47. Correct answer d. With a significant change in labor productivity, the labor rate is no longer “purchasing” the same amount of product. Therefore, there is a significant impact on the reliability of the model.
48. Correct answer d.
- |           |   |                             |               |
|-----------|---|-----------------------------|---------------|
| Sales (S) | = | \$10,000 + \$2.50A          | (A = \$1,000) |
|           | = | \$10,000 + \$2.50 (\$1,000) |               |
|           | = | \$10,000 + \$2,500          |               |
|           | = | <u>\$12,500</u>             |               |
49. Correct answer c.
- |   |   |                  |
|---|---|------------------|
| Y | = | 1.54X + 5.23     |
|   | = | 1.54 (10) + 5.23 |
|   | = | 15.4 + 5.23      |
|   | = | <u>20.63</u>     |
50. Correct answer b. Learning curve analysis is a function that shows how labor hours per unit decline as units of production increase due to workers learning and becoming better at their jobs.
51. Correct answer a. In the cumulative average-time learning model, the cumulative average time per unit declines by a constant percentage each time the cumulative quantity of units produced doubles.
- |        |                   |                |
|--------|-------------------|----------------|
| Unit 1 | 10,000 hrs.       |                |
| Unit 2 | 8,000 hrs.        | (10,000 x .80) |
| Unit 4 | 6,400 hrs.        | (8,000 x .80)  |
| Unit 8 | <u>5,120 hrs.</u> | (6,400 x .80)  |
52. Correct answer d. In the cumulative average-time learning model, the cumulative average time per unit declines by a constant percentage each time the cumulative quantity of units produced doubles.
53. Correct answer d.
- |                           |   |                                   |
|---------------------------|---|-----------------------------------|
| Average hrs. for 20 units | = | <u>(5,000 + 3,000) ÷ 20 units</u> |
| Average hrs. for 10 units | = | 5,000 ÷ 10 units                  |
|                           | = | 400 hours ÷ 500 hours             |
|                           | = | <u>80% Learning rate</u>          |
54. Correct answer b. Cumulative direct labor hours = 8 units x 5,120 hours\*
- = 40,960 hours

\* Unit 1 10,000 hrs.  
 Unit 2 8,000 hrs. (10,000 x .80)  
 Unit 4 6,400 hrs. (8,000 x .80)  
 Unit 8 5,120 hrs. (6,400 x .80)



61. Correct answer a.

$$\begin{aligned}\text{Expected value} &= (.2 \times \$60,000) + (.3 \times \$30,000) + (.3 \times \$10,000) - (.2 \times \$4,000) \\ &= \$12,000 + \$9,000 + \$3,000 - \$800 \\ &= \underline{\$23,200}\end{aligned}$$

62. Correct answer b.

$$\begin{aligned}\text{Plan 1 expected value} &= (\$300,000 \times .4) + (\$240,000 \times .6) &= \$264,000 \\ \text{Plan 2 expected value} &= (\$370,000 \times .4) + (\$180,000 \times .6) &= \underline{\$256,000} \\ \text{Plan 1 is greater by} && \underline{\$8,000}\end{aligned}$$

63. Correct answer d. Recommend Vendor S which has the least cost (initial purchase plus the cost of failure) as shown below.

$$\begin{aligned}\text{Vendor P} &= (100,000 \times \$35) + [(100,000 \times .10) \times (\$35 + \$25)] &= \$4.1 \text{ million} \\ \text{Vendor Q} &= (100,000 \times \$37) + [(100,000 \times .06) \times (\$37 + \$25)] &= \$4.072 \text{ million} \\ \text{Vendor R} &= (100,000 \times \$39) + [(100,000 \times .03) \times (\$39 + \$25)] &= \$4.092 \text{ million} \\ \text{Vendor S} &= (100,000 \times \$40) + [(100,000 \times .01) \times (\$40 + \$25)] &= \$4.065 \text{ million}\end{aligned}$$

64. Correct answer c. For both actions, the \$650,000 is sunk cost and should not be considered.

$$\begin{aligned}\text{Expected value of investing} &= .6 (\$15.0 \text{ mil} - \$9.5 \text{ mil}) + .4 (\$2.0 \text{ mil} - \$9.5 \text{ mil}) \\ &= \$3.3 \text{ mil} - \$3.0 \text{ mil} \\ &= \underline{\$300,000}\end{aligned}$$

$$\text{Value of not investing} = \underline{(\$100,000)} \text{ additional costs to be paid}$$

65. Correct answer d. Ranking is B: \$34,000, C: \$30,000, A: \$26,000 calculated as follows.

$$\begin{aligned}\text{Investment A} &= .3 (-\$20,000) + .1 (-\$10,000) + .3 (\$30,000) + .2 (\$70,000) + .1 (\$100,000) \\ &= -\$6,000 + -\$1,000 + \$9,000 + \$14,000 + \$10,000 \\ &= \underline{\$26,000} \\ \text{Investment B} &= .2 (-\$20,000) + .2 (-\$10,000) + .2 (\$30,000) + .2 (\$70,000) + .2 (\$100,000) \\ &= -\$4,000 + -\$2,000 + \$6,000 + \$14,000 + \$20,000 \\ &= \underline{\$34,000} \\ \text{Investment C} &= .3 (-\$20,000) + .1 (-\$10,000) + .2 (\$30,000) + .3 (\$70,000) + .1 (\$100,000) \\ &= -\$6,000 + -\$1,000 + \$6,000 + \$21,000 + \$10,000 \\ &= \underline{\$30,000}\end{aligned}$$

66. Correct answer c.

$$\begin{aligned}\text{Increased units sold} &= .1 (15,000) + .35 (30,000) + .1 (45,000) + .25 (60,000) + .2 (75,000) \\ &= 1,500 + 10,500 + 4,500 + 15,000 + 15,000 \\ &= 46,500 \text{ units} \\ \text{Increased profit} &= [46,500 \times (\$5.20 - \$3.20)] - \$40,000 \\ &= \$93,000 - \$40,000 \\ &= \underline{\$53,000}\end{aligned}$$

67. Correct answer b.

$$\begin{aligned}\text{Expected return} &= .1 (-.20) + .2 (.05) + .4 (.15) + .2 (.20) + .1 (.30) \\ &= -.02 + .01 + .06 + .04 + .03 \\ &= \underline{.12 \text{ or } 12\%}\end{aligned}$$

68. Correct answer a. Alternative #1 has the highest expected value as shown below.

$$\begin{aligned}\text{Alternative \#1} &= .1(\$50,000) + .2(\$75,000) + .4(\$100,000) + .3(\$150,000) \\ &= \underline{\$105,000} \\ \text{Alternative \#2} &= .1(\$50,000) + .2(\$75,000) + .45(\$100,000) + .25(\$150,000) \\ &= \$102,500 \\ \text{Alternative \#3} &= .1(\$50,000) + .2(\$75,000) + .4(\$100,000) + .3(\$125,000) \\ &= \$97,500 \\ \text{Alternative \#4} &= .1(\$150,000) + .2(\$100,000) + .4(\$75,000) + .3(\$50,000) \\ &= \$80,000\end{aligned}$$

69. Correct answer c. Recommend purchasing 12,000 based on expected demand of 11,400.

$$\begin{aligned}\text{Expected demand} &= .1(8,000) + .4(10,000) + .3(12,000) + .2(15,000) \\ &= 11,400\end{aligned}$$

70. Correct answer b. Incorporating non-financial as well as financial measures is beneficial to an organization. The other alternatives given are disadvantages or misuses of traditional budgets.

71. Correct answer c. A financial budget consists of the capital expenditure budget, the cash budget detailing inflows, outflows, and borrowing needs, and the balance sheet. These statements combined with the budgeted income statement produce the Statement of Cash Flows.

72. Correct answer d. The production budget and the purchases budget must be completed before the cost of goods sold budget can be completed. An administrative budget may also be dependent on the planned sales and manufacturing activity and is generally completed after all production revenues and costs have been budgeted.

73. Correct answer c. The revenue or sales budget provides the foundation for a master budget and is therefore prepared first. The production budget is dependent on the amount of projected sales and the direct material budget is based on the forecasted production quantity.
74. Correct answer c. The zero-based budgeting approach looks at operations as if they were just beginning and requires justification for all revenues and expenditures.
75. Correct answer a. Flexible budgets are based on actual output rather than comparing output to a static budget. Flexible budgets make it easier to identify realistic positive and negative variances.
76. Correct answer d. Flexible budgets are based on the output actually achieved and therefore provide a realistic comparison of budgeted and actual revenue and costs.
77. Correct answer d. Flexible budgets are based on the output actually achieved or expected rather than a static amount. Therefore, the required labor for the expected increase in business can be calculated.
78. Correct answer a. Netco's sales will decrease by \$1,050,000 as shown below.

Item 1 =	(200,000 x .8) x (\$50 x 1.1)		
=	160,000 x \$55	=	\$ 8,800,000
Item 2 =	(160,000 x .75) x \$10	=	1,200,000
Item 3 =	(300,000 x 1.05) x \$30	=	<u>9,450,000</u>
	Total sales revenue		\$19,450,000
	Original budget		<u>-20,500,000</u>
	Revenue decrease		<u>\$-1,050,000</u>

79. Correct answer b. Hannon's budget for purchased inventory should be \$540,000.

August	\$728,000 ÷ 1.3	=	\$560,000 x .75	=	\$420,000
September	\$624,000 ÷ 1.3	=	\$480,000 x .25	=	<u>120,000</u>
					<u>\$540,000</u>

80. Correct answer c. Streeter should produce 78,000 units as shown below.

Production for 2 <sup>nd</sup> quarter	72,000 x .5	=	36,000
Production for 3 <sup>rd</sup> quarter	84,000 x .5	=	<u>42,000</u>
Production			<u>78,000</u>

81. Correct answer c. Ming should plan to produce 7,133 units next fiscal year.

$$\begin{aligned}
 &\text{Sales} - \text{Beg. Inventory} + \text{Ending Inventory} \\
 &6,300 - 470 + 590 = 6,420 \text{ units} \\
 &\text{To cover 10\% scrap} = 6,420 \div .9 = \underline{7,133 \text{ units}}
 \end{aligned}$$

82. Correct answer b. Savior's production budget for the first quarter is 71,700 units.

$$\begin{aligned}\text{Daily sales} &= 67,500 \div (360 \div 4) = 750 \text{ units sold per day} \\ \text{10 days' sales} &= 750 \times 10 \text{ days} = 7,500 \text{ units for ending inventory} \\ \text{Production} &= 67,500 + 7,500 - (3,500 - 200) = \underline{71,700 \text{ units}}\end{aligned}$$

83. Correct answer d. Streeter should produce 86,000 units as shown below.

$$\begin{aligned}\text{Ending inventory} &= (72,000 \times .5) - 8,000 = 28,000 \text{ units} \\ \text{Production} &= 72,000 - 28,000 + (84,000 \times .5) = \underline{86,000 \text{ units}}\end{aligned}$$

84. Correct answer a. Rombus should produce 3,700 units as shown below.

$$\begin{aligned}\text{Production} &= \text{Sales} - \text{Beg. Inventory} + \text{Ending inventory} \\ &= 4,000 - 900 + 600 \\ &= \underline{3,700 \text{ units}}\end{aligned}$$

85. Correct answer c. The cost of one laminated putter head is \$52 calculated as follows.

$$\begin{aligned}\text{Production} &= 8,200 - 300 + 100 = 8,000 \text{ forged units} \\ \text{Direct labor} &= 8,000 \times .25 \text{ hrs.} = 2,000 \text{ hours for forged units} \\ &= 2,000 \times 1.0 \text{ hrs.} = 2,000 \text{ hours for laminated units} \\ \text{Variable O/H/hr.} &= \$25,000 \div 4,000 \text{ hrs.} = \$6.25/\text{hr.} \\ \text{Fixed O/H/hr.} &= \$15,000 \div 4,000 \text{ hrs.} = \$3.75/\text{hr.}\end{aligned}$$

Laminated putter head cost:	Steel	\$ 5.00
	Copper	15.00
	Direct labor	22.00
	Variable overhead	6.25
	Fixed overhead	<u>3.75</u>
	Total cost	<u>\$52.00</u>

86. Correct answer c. The units to be purchased in February total 6,100 units as shown below.

$$\begin{aligned}\text{February unit sales} &= (\$66,000 + \$44,000) \div \$20 = 5,500 \text{ units} \\ \text{March unit sales} &= \$150,000 \div \$20 = 7,500 \text{ units} \\ \text{February purchase} &= (5,500 \times .7) + (7,500 \times .3) = \underline{6,100 \text{ units}}\end{aligned}$$

87. Correct answer b. Stevens should purchase \$675,000 of Geo and \$300,000 of Clio.

$$\begin{aligned}\text{Production components} &= 20,000 \text{ first period} + (20,000 \times .25) \text{ second period} = 25,000 \\ \text{Pounds of Geo} &= (25,000 \times 2 \text{ lbs.}) - 5,000 \text{ inventory} = 45,000 \text{ lbs.} \\ \text{Cost of Geo} &= 45,000 \times \$15 = \underline{\$675,000} \\ \text{Pounds of Clio} &= (25,000 \times 1.5 \text{ lbs.}) - 7,500 \text{ inventory} = 30,000 \text{ lbs.} \\ \text{Cost of Clio} &= 30,000 \times \$10 = \underline{\$300,000}\end{aligned}$$

88. Correct answer d. The amount that should be budgeted for direct labor is \$105,000.

$$\begin{array}{rclcl}
 \text{Cost of production} & = & \$400,000 - \$10,000 + \$25,000 & = & \$415,000 \\
 \text{Cost of Direct labor + O/H} & = & \$415,000 - \$100,000 \text{ material} & = & \$315,000 \\
 \text{Cost of Direct labor} & = & \$315,000 \div 3^* & = & \underline{\$105,000}
 \end{array}$$

\*Overhead = 2 x direct labor

89. Correct answer d. McFadden's expected shipping costs total \$20,800 as shown below.

$$\begin{array}{rcl}
 \text{Shipping costs} & = & (9,600 \text{ lbs.} \times \$0.50/\text{lb.}) + \$16,000 \text{ fixed cost} \\
 & = & \underline{\$20,800}
 \end{array}$$

90. Correct answer a. Swan needs to purchase 85,000 yards of fabric as shown below.

$$\begin{array}{rcl}
 \text{Sales} - \text{Ending Inventory} + \text{Beginning Inventory} & = & \\
 90,000 - 25,000 + 20,000 & = & \underline{85,000 \text{ yards}}
 \end{array}$$

91. Correct answer a. Manoli should purchase goods totaling \$40,820 as shown below.

$$\begin{array}{rclcl}
 \text{November:} & \$58,000 \times .65 & = & & \\
 & \$37,700 \times .70 & = & \$26,390 & \\
 \text{December:} & \$74,000 \times .65 & = & & \\
 & \$48,100 \times .30 & = & \underline{\$14,430} & \\
 \text{Total purchases} & & & & \underline{\underline{\$40,820}}
 \end{array}$$

92. Correct answer c. The company should purchase 8,700 pounds of material as shown below.

$$\begin{array}{rclcl}
 \text{Units to be completed} & = & 2,000 - 250 + 325 & = & 2,075 \\
 \text{Pounds required} & = & 2,075 \text{ units} \times 4 \text{ lbs.} & = & 8,300 \\
 \text{Pounds purchased} & = & 8,300 - 400 + 800 & = & \underline{8,700}
 \end{array}$$

93. Correct answer d. The number of shoes to be purchased is 404,000 as shown below.

$$\begin{array}{rclcl}
 \text{Dolls to be completed} & = & 200,000 - 12,000 + 15,000 & = & 203,000 \\
 \text{Shoes needed} & = & 203,000 \times 2 & = & 406,000 \\
 \text{Shoes purchased} & = & 406,000 - 20,000 + 18,000 & = & \underline{404,000}
 \end{array}$$

94. Correct answer c. The budget for Maker's July purchases is \$364,500 as shown below.

$$\begin{array}{rclcl}
 \text{July:} & \$600,000 \times .60 & = & & \\
 & \$360,000 \times .85 & = & \$306,000 & \\
 \text{August:} & \$650,000 \times .60 & = & & \\
 & \$390,000 \times .15 & = & \underline{58,500} & \\
 \text{Total purchases} & & & & \underline{\underline{\$364,500}}
 \end{array}$$



95. Correct answer b. Beginning finished goods inventory would have been produced in a prior period and, therefore, should not be included on a projected schedule of cost of goods manufactured.
96. Correct answer d. Freight charges paid for the delivery of raw materials are generally associated with the cost of making a product and not included as part of overhead.

97. Correct answer a. Valley's predetermined overhead application rate is \$2.09.

$$\begin{aligned} & (\text{Indirect material} + \text{Indirect labor} + \text{Utilities}) \div \text{Production} \\ & (\$1,000 + \$10,000 + \$12,000) \div 11,000 = \underline{\$2.09} \end{aligned}$$

98. Correct answer b. Scurry's cost of goods sold is \$600,000 as shown below.

$$\begin{aligned} & \text{Beg. finished goods} + \text{Cost of goods manufactured} - \text{Ending finished goods} \\ & \$100,000 + \$700,000 - \$200,000 = \underline{\$600,000} \end{aligned}$$

99. Correct answer a. Tut's selling and administrative costs total \$652,760 as shown below.

Variable costs	$(\$18.60 \times .90) \times \$24,000$	=	\$401,760
Step costs	$(\$85,000 \div 17) \times 15$	=	75,000
Fixed costs		=	<u>176,000</u>
Total costs			<u>\$652,760</u>

100. Correct answer c. Granite's accounts receivable balance will be \$146,000 as shown below.

$$\begin{aligned} \text{May A/R balance} &= 15\% \text{ of March} + 40\% \text{ of April} \\ &= .15 (\$280,000) + .4 (\$260,000) \\ &= \underline{\$146,000} \end{aligned}$$

101. Correct answer a. The employee taxes withheld and due to be remitted in July is the only item listed that actually affects cash flows in the month of July.

102. Correct answer c. The expected cash collections for Brown total \$108,000.

$$\begin{aligned} \text{Cash collections} &= \$8,000 + [(\$72,000 \div .6) \times .5] + (\$100,000 \times .4) \\ &= \$8,000 + \$60,000 + \$40,000 \\ &= \underline{\$108,000} \end{aligned}$$

103. Correct answer c. Cooper's cash balance will increase \$112,500 as shown below.

Opening balance	\$100,000	February A/R	+800,000
A/R balance	+300,000	February A/P	- 425,000
A/P balance	- 500,000	February Other	- 175,000
January A/R	+700,000	March A/R*	+200,000
January A/P	- 350,000	March A/P**	- 112,500
January Other	- 150,000	March Other	- 175,000
		Cash balance	<u>\$212,500</u>
		Less opening	<u>100,000</u>
		Cash increase	<u>\$112,500</u>

\* \$500,000 x .4

\*\* \$225,000 x .5

104. Correct answer b. Planned net accounts receivable balance as of December 31 is \$294,000:

November (\$480,000 x .8 x .25)	= \$96,000
December (\$450,000 x .8 x .55)	= <u>\$198,000</u>
Total AR as of December	<u>\$294,000</u>

105. Correct answer a. Wallstead's April cash collections total \$343,000 as shown below.

March discounted collections	=	(\$370,000 x .5) x .98	=	\$181,300
March undiscounted collections	=	\$370,000 x .3	=	111,000
February collections	=	\$340,000 x .15	=	<u>51,000</u>
Total collections				<u>\$343,000</u>

106. Correct answer a. Tip-Top's first quarter collections total \$811,000 as shown below.

Collectible sales first quarter	=	\$855,000 x .95	=	\$812,250
Daily collectible sales	=	\$812,250 ÷ 90 days	=	\$9,025
40 days of sales	=	\$9,025 x 40 days	=	\$361,000
Total collections	=	\$361,000 + \$450,000*	=	<u>\$811,000</u>
*Net A/R from last quarter				

107. Correct answer b. Monroe will need to borrow \$70,000 as shown below.

	<u>January</u>	<u>February</u>
Opening balance	\$ 30,000	\$ 0
Plus collections	200,000	200,000
Less purchases*	210,000	240,000
Less other expenses	<u>20,000</u>	<u>20,000</u>
Closing balance	\$ 0	\$-60,000

Required borrowing = \$60,000 + \$10,000 = \$70,000

\*January = Feb. sales \$350,000 x .6

February = March sales \$400,000 x .6

108. Correct answer c. Prudent's May cash receipts budget is \$735,000 as shown below.

Collections from April sales	=	(\$700,000 x .8) x .25	=	\$140,000
May cash sales	=	\$750,000 x .2	=	150,000
May A/R collections	=	(\$750,000 x .8) x .70	=	420,000
Sale of equipment				<u>25,000</u>
Total cash collections				<u>\$735,000</u>

109. Correct answer b. ANNCO's January cash collections total \$174,500 as shown below.

November sales collections	=		=	\$ 49,500
December sales collections	=	(\$162,000 ÷ .9) x .6	=	108,000
January sales collections	=	\$170,000 x .1	=	<u>17,000</u>
Total cash collections				<u>\$174,500</u>

110. Correct answer c. Brooke's February cash balance is \$232,500 as shown below.

	January		February
Opening balance	\$200,000		\$ 55,000
Accounts receivable	300,000 (Dec.)		420,000 (700,000 x .6)
Accounts receivable	280,000 (700,000 x .4)		320,000 (800,000 x .4)
Accounts payable	400,000 (Dec.)		175,000 (350,000 x .5)
Accounts payable	175,000 (350,000 x .5)		212,500 (425,000 x .5)
Other expense	<u>150,000</u>		<u>175,000</u>
Cash balance	\$ 55,000		<u>\$232,500</u>

111. Correct answer c. Health Foods' March cash receipts total \$242,000 as shown below.

March cash sales	=	\$250,000 x .6	=	\$150,000
March sales collections	=	(\$250,000 x .4 x .5)	=	50,000
February sales collections	=	(\$240,000 x .4 x .3)	=	28,800
January sales collections	=	(\$220,000 x .4 x .15)	=	<u>13,200</u>
Total cash collections				<u>\$242,000</u>

112. Correct answer c. The company will need to borrow \$11,000 in January as shown below.

Opening balance	\$ 24,900	
January collections	86,000	(\$32,000 + \$54,000)
January expenses	<u>106,500</u>	
Closing balance	\$ 4,400	
Less minimum balance	<u>15,000</u>	
Borrowing need	\$ 10,600	rounded to <u>\$11,000</u>

113. Correct answer b. Johnsen's budgeted cash receipts total \$684,500 as shown below.

September cash sales	=	(\$800,000 x .3)	=	\$240,000
September sales collections	=	(\$800,000 x .7 x .2)	=	112,000
August sales collections	=	(\$650,000 x .7 x .5)	=	227,500
July sales collections	=	(\$600,000 x .7 x .25)	=	<u>105,000</u>
Total cash collections				<u>\$684,500</u>

114. Correct answer c. Mountain Mule will need to borrow \$10,000 as shown below.

	January	February	March
Opening balance	\$85,000	\$60,000	\$ 0
Collections	---	---	60,000
Purchases	---	35,000	40,000
Operating expenses	<u>25,000</u>	<u>25,000</u>	<u>25,000</u>
Closing balance	\$60,000	\$ 0	\$ -5,000

With required balance of \$5,000 and negative cash of \$5,000, need to borrow \$10,000.

### Section C: Performance Management

115. Correct answer b. A static budget is based on the level of output planned at the start of the budget period and does not change no matter what the level of actual output. Comparison of actual activities to static budget levels is difficult and often misleading.
116. Correct answer b. If a company experiences an increase in sales volume, the actual revenue will be greater than the master budget revenue (favorable variance) and the actual costs will be greater than the master budget costs (unfavorable variances).
117. Correct answer b. The use of a standard cost system has several benefits but they are generally based on quantitative factors and not qualitative characteristics.
118. Correct answer a. For flexible budgets, variable costs are given per unit so that comparisons can be readily made at various levels of output. Fixed costs are expected to remain the same over the relevant range and, therefore, are given in total.
119. Correct answer d. Flexible budgets are preferable for both planning purposes and performance reporting as the flexible budget can be based on the actual amount of output and then compared to the actual revenue and costs.

120. Correct answer c. The sales-volume variance is \$16,000 favorable as shown below.

	<u>Flexible Budget</u>	<u>Static Budget</u>
Units	100,000	80,000
Sales dollars	\$200,000	\$160,000
Variable costs	120,000	96,000
Fixed costs	<u>40,000</u>	<u>40,000</u>
Operating income	<u>\$ 40,000</u>	<u>\$ 24,000</u>

$$\text{Sales volume variance} = \$40,000 - \$24,000 = \underline{\$16,000 \text{ F}}$$

121. Correct answer c. Efficiency variances are sometimes referred to as usage variances and measure quantity used. Material usage and labor efficiency (usage) are likely to be related, e.g., poor quality material will likely cause excess usage and require additional labor.
122. Correct answer d. A static budget is based on projected output while a flexible budget is based on actual output. As a result, the actual cost of the actual output can be compared to the budgeted cost for the actual output.
123. Correct answer c. The use of management by exception reporting requires the same amount of advanced planning as any other type of variance reporting. The time savings of management by exception arises in potentially investigating fewer variances.
124. Correct answer b. The standard variable overhead rate per direct labor hour is \$4.00 calculated as follows.

$$\begin{aligned}
 \text{Standard hours/unit} &= 10,000 \text{ hours} \div 5,000 \text{ units} \\
 &= 2 \text{ hours/unit} \\
 \text{Standard hours for output} &= 4,500 \text{ units} \times 2 \text{ hours} \\
 &= 9,000 \text{ hours} \\
 \text{VOH efficiency variance: } (9,000 - 9,600) \times R &= -\$2,400 \\
 -600R &= -\$2,400 \\
 R &= \underline{\$4.00}
 \end{aligned}$$

125. Correct answer d. The actual wage rate per hour is \$7.50 and the actual hours worked equals 38 as shown below.

$$\begin{aligned}
 \text{Actual hours:} \quad (X - 40) \times \$7 &= -14 \\
 X - 40 &= -2 \\
 X &= \underline{38 \text{ hours}} \\
 \text{Wage rate:} \quad (X - \$7) \times 38 &= 19 \\
 X - \$7 &= .50 \\
 X &= \underline{\$7.50}
 \end{aligned}$$

126. Correct answer a. If variable overhead is applied on the basis of direct labor hours and overhead spending is \$25,000 less than expected, it means that labor was very efficient, e.g., highly skilled labor.
127. Correct answer c. With a single supplier, the purchasing manager should not be held responsible for the price variance. The standard material price should be increased.
128. Correct answer c. The conclusion regarding the operating income is correct but the variance information could be more specific, e.g., lower sales, higher variable cost, and higher fixed costs all contributed to the operating income variance.
129. Correct answer b. The use of lower-skilled labor is not likely to lead to a favorable direct labor efficiency variance but is more likely to cause this variance to be unfavorable. Lower-skilled labor could also affect the material quantity variance negatively.
130. Correct answer b. The material variance should be investigated since it is \$11,000 which is greater than 10% of the budget (\$100,000 x .1). The direct labor variance is \$4,000 which is less than 10% of budget (\$50,000 x .1) so it would not be investigated under the company policy.
131. Correct answer c. A favorable direct labor price variance could indicate that lower-skilled labor is being used that what was planned. This could lead to unfavorable labor use and material usage variances that more than offset the favorable price variance.
132. Correct answer d. Frisco's purchase price variance is \$10,800 F calculated as follows.

Price per unit purchased:	$\$583,200 \div 108,000$	=	\$5.40	
Standard price per unit:	$\$16.50 \div 3$	=	\$5.50	
Purchase price variance	$(\$5.50 - \$5.40) \times 108,000$	=		<u>\$10,800 F</u>

133. Correct answer b. SBL's material price variance is \$300 F as shown below.

Price variance	=	(Actual price – Standard price) x Actual quantity
	=	(\$7.90 - \$8.00) x 3,000
	=	<u>\$300 F</u>

134. Correct answer c. The raw material price variance (purchase price variance) is \$10,000 U as shown below.

Price variance	=	(Actual price – Standard price) x Actual quantity
	=	(\$2.02 - \$2.00) x 500,000
	=	<u>\$10,000 U</u>

135. Correct answer d. The actual direct labor hours used by Lee Manufacturing is 12,100 calculated as follows.

$$\begin{aligned}\text{Efficiency variance: } & (\text{Actual quantity} - \text{Standard quantity}) \times \text{Standard price} \\ \text{Standard quantity} &= 6,000 \text{ units} \times 2 \text{ hours per unit} \\ &= 12,000 \text{ hours} \\ \text{Actual hours: } & (X - 12,000) \times \$15 = \$1,500 \\ & X - 12,000 = 100 \\ & X = \underline{12,100}\end{aligned}$$

136. Correct answer b. Douglas' direct material variance is \$2,000 U as shown below.

$$\begin{aligned}\text{Material standard price/unit} &= \$15,000 \div 10,000 \\ &= \$1.50 \\ \text{Material variance} &= (\$1.50 \times 12,000) - \$20,000 \\ &= \$18,000 - \$20,000 \\ &= \underline{\$2,000 \text{ U}}\end{aligned}$$

137. Correct answer a. The rate variance will show how the price paid for direct labor varies from the standard price. The efficiency variance shows how the number of direct labor hours used varies from the standard number of direct labor hours.

138. Correct answer b. Employees in the Shipping Department have nothing to do with the amount of material used in the production process. All of the other answers could affect the quantity of material used.

139. Correct answer c. The company had a favorable labor price of \$33,000 as shown below.

$$\begin{aligned}X - \$18,000 &= \$15,000 \\ X &= \underline{\$33,000 \text{ F}}\end{aligned}$$

140. Correct answer d. Cordell's production volume variance is \$30,000 U as shown below.

$$\begin{aligned}\text{Standard fixed cost per unit} &= \$600,000 \div 200,000 \\ &= \$3 \text{ per unit} \\ \text{Product volume variance} &= (190,000 - 200,000) \times \$3 \\ &= \underline{\$30,000 \text{ U}}\end{aligned}$$

141. Correct answer b. If variable overhead is applied on the basis of direct labor hours and the number of direct labor hours used is favorable, then the variable overhead efficiency (usage) variance must also be favorable.

142. Correct answer b. Harper's total overhead spending variance is \$115,000 favorable calculated as follows.

$$\begin{array}{rcl} \text{Variable overhead} & = & \text{Actual total overhead} - \text{Fixed overhead} \\ & = & \$1,600,000 - \$1,500,000 \\ & = & \$100,000 \\ \text{Spending variance} & = & (\text{Input} \times \text{Standard rate}) - \text{Actual variable overhead} \\ & = & (430,000 \times \$0.50) - \$100,000 \\ & = & \underline{\underline{\$115,000 \text{ F}}} \end{array}$$

143. Correct answer d. JoyT's variable overhead spending variance is \$22,000 favorable calculated as follows.

$$\begin{array}{rcl} \text{Spending variance} & = & (\text{Input} \times \text{Standard rate}) - \text{Actual variable overhead} \\ & = & (10,300 \times \$60^*) - \$596,000 \\ & = & \underline{\underline{\$22,000 \text{ F}}} \end{array}$$

$$*\$600,000 \div 10,000$$

144. Correct answer d. A fixed overhead volume variance is dependent on quantity, above or below the planned quantity. An unfavorable volume variance means that production was less than planned.
145. Correct answer d. The spending variance is the difference between actual and budgeted rates times the actual base input.
146. Correct answer d. All the departments bear some responsibility for the usage variance: Marketing because the rush order was accepted, Purchasing because of the delay in ordering the materials, and Production for bypassing the normal inspection process.
147. Correct answer d. The materials quantity variance does reflect the fact that 1,000 units were produced rather than the planned 900 units. By indicating the standard usage is 3,000 (3 per unit), the standard usage for the actual output is compared with the actual material usage.
148. Correct answer b. Unfavorable material usage variances are generally caused by inferior materials or lower-skilled workers. Unfavorable usage variances shown that more material than the standard quantity was used; this is not likely to be caused by lower-than-planned production.
149. Correct answer b. A sales team is generally only accountable for sales dollars; this type of responsibility center is, therefore, a revenue center.
150. Correct answer d. If the Sales Department operates as a profit center and accepts a rush order, it should incur the extra cost of the rush order. The overtime required should not be charged to the Production Department as the manager would then be inclined to reject the order as not beneficial to the department goals.
151. Correct answer b. If corporate and support costs are being allocated to divisions and departments, there is very little incentive for central managers to control costs no matter how much pressure they receive from profit-center managers.



152. Correct answer b. The use of budgeted rates and standard hours ensures that all departments know what rates will be charged and how many hours will be charged. This allows usage to be properly planned and encourages service providers to be efficient.
153. Correct answer c. A transfer price is the price one business unit charges for a product or service supplied to another business unit of the same organization. This pricing structure does not apply to external customers.
154. Correct answer c. The management of the two divisions should negotiate the transfer price. Negotiation is most likely to ensure that both managers are satisfied with the resultant price.
155. Correct answer d. A market-based transfer price will motivate the manager of the selling division to be efficient in order to earn the greatest profit or contribution margin.
156. Correct answer c. Selling the product internally allows the division to avoid paying sales commissions and incurring the cost of collections thus justifying a transfer price that is lower than the market price. Other costs such as promotion and advertising might also be avoided.
157. Correct answer c. Dual pricing promotes goal congruence, e.g., the selling division receives full cost plus markup price which allows the division to earn a profit while the buying division pays the market price and is no worse off than if purchasing from an outside vendor. The organization as a whole is unaffected by the internal transfers.
158. Correct answer a. Since the Fabrication Division has excess capacity, the minimum price to be charged would be \$21 to cover the variable manufacturing costs. The selling and distribution costs will be avoided, and the fixed costs will be incurred whether or not the 4,500 units are sold to the Electronic Assembly Division.
159. Correct answer d. As long as Green Division has excess capacity and does not have to turn down any sales at a 60% markup, Green will transfer product to Red Division at cost plus 10%.
160. Correct answer d. The company should use all the categories of performance measurement to ensure that it remains competitive and profitable.
161. Correct answer c. Earnings per share depend not only on net income but also on the number of shares outstanding. Managers generally have no control over the number of shares issued and should not be measured on earnings per share.
162. Correct answer d. Measuring performance on the total dollars processed would lead to paying attention to those claims with the greatest dollar value and ignoring smaller claims, not a good process for customer satisfaction.
163. Correct answer b. Cooper is expected to fill and deliver orders accurately at the least cost to the company. Measuring his performance on the percentage of on-time and accurate orders plus the cost to fill and deliver orders would result in Cooper pursuing the proper goals.

164. Correct answer b. Morgan is responsible for assisting customers accurately and quickly. The number of calls received regarding a new product should be the concern of the product developers; this might affect Morgan's staff's ability to shorten customer "hold" time but is not her responsibility.
165. Correct answer d. The Repair and Maintenance Department is expected to keep the production equipment in good working order to facilitate keyboard production. If the production departments are satisfied, it is a good indication that Repair and Maintenance is doing a good job.
166. Correct answer c. A budgeted rate should be established so that all departments know in advance how much they will be charged for actual usage. Using this rate also encourages cost control in the Computer Department.
167. Correct answer d. In order to increase residual income, the expected return on the new project must be higher than the cost of capital (required rate of return) but lower than the current return on investment.
168. Correct answer b. All projects with a projected ROI that is greater than the required rate of return (cost of capital) would add value to KHD Industries. Without capital restrictions, Projects B, C, and D should be selected.
169. Correct answer b. Division B has the highest actual return on investment and 8% return on sales, the second highest return. The division with the highest return on sales actually failed to meet its target return on investment.
170. Correct answer b. Since the system was constructed on the basis of the anticipated number of hours of usage, it is reasonable to base the allocation on the same measure.
171. Correct answer d. As long as the project return is above the cost of capital, the manager of the Construction Equipment Division will accept the project. The manager of the Household Appliances Division, measured on the basis of ROI, will not accept a projected rate of return of 14% when the current ROI of the division is 16%.
172. Correct answer d. Using residual income as a performance measure means that a business unit should continue to expand as long as projects earn a return in excess of the required rate of return.
173. Correct answer d. To focus on both long-term and short-term objectives, a variety of performance measures should be used. Using a single measure such as ROI can cause negative actions such as rejecting projects that meet the hurdle but might adversely affect the division's rate of return.
174. Correct answer a. The four perspectives of the balanced scorecard include options b, c, and d plus the customer perspective. Competitor business strategies are not included.
175. Correct answer d. The balanced scorecard is not based on scientific management theory but is a flexible means of translating a company's strategy into a comprehensive set of performance measures.

## Section D: Cost Management

176. Correct answer b. The variable costs per flight would include fuel, food service, and landing fees. Other costs mentioned such as salaries, depreciation, marketing, and communications would not vary with individual flights.
177. Correct answer b. Sales commissions on cars would be part of the cost of the car dealership, not the manufacturer. Options a and d are direct material costs while option c would be charged to manufacturing overhead.
178. Correct answer a. Cost A appears to be semi-variable or mixed as it varies between quantities but does not vary consistently so a portion must be fixed and a portion variable. Cost B is fixed in the relevant range (14,000 units) and Cost C varies consistently for all quantities and therefore must be variable.
179. Correct answer b. The variable cost per unit would remain the same as the volume decreases. All other costs listed would change with a change in volume.
180. Correct answer d. Cost A is variable as it is consistently \$1.42 per unit for each quantity. Cost B is semi-variable as it varies between quantities but not consistently so a portion must be fixed. Cost C is fixed as it is the same for all quantities. Cost D, like Cost A, is variable at \$1.63 per unit.
181. Correct answer b. The cost of electricity could be semi-variable with a fixed monthly charge plus a per unit charge for usage. All other costs listed are either fixed (a and d) or variable (c).
182. Correct answer b. The variable marketing cost would include the 8% sales commission plus the ½% manager's incentive,  $8.5\% \times \$100,000 = \$8,500$ .
183. Correct answer a. The allocation of indirect costs to cost objects would increase total costs identified with products rather than reduce total costs identified.
184. Correct answer a. The relevant range is the band of activity or volume over which certain cost relationships such as fixed costs remain valid.
185. Correct answer b. If a cost is strictly variable within the relevant range, the unit cost will be consistently the same and will not increase or decrease with a change in volume.
186. Correct answer c. One of the basic assumptions of cost behavior is that a cost can be approximated by a linear cost function within the relevant range. A linear cost function is one in which the graph of total costs versus the level of activity is a straight line.
187. Correct answer b. The variable per unit component of Lar's electricity cost will remain constant over the relevant range and not change with an increase or decrease in volume.

188. Correct answer c. Kimber's total manufacturing cost will be \$615,000 as shown below.

Variable cost:	9,000 units x (\$20 + \$25 + \$10)	=	\$495,000
Fixed cost:	8,000 units x \$15	=	<u>120,000</u>
	Total manufacturing cost		<u>\$615,000</u>

189. Correct answer c. Plunkett's product costs were \$656,100 and the period costs were \$493,000, as shown below.

	<u>Product Costs</u>		<u>Period Costs</u>
Direct material	\$ 56,000	Variable selling	\$108,400
Direct labor	179,100	Fixed selling	121,000
Variable overhead	154,000	Administrative	235,900
Fixed overhead	<u>267,000</u>	Fire loss	<u>27,700</u>
Total product costs	<u>\$656,100</u>	Total period costs	<u>\$493,000</u>

190. Correct answer c. The only difference between actual costing and normal costing is that actual costing uses actual indirect-cost rates while normal costing uses budgeted indirect cost rates. Therefore, normal costing does not improve the accuracy of job or product costing.

191. Correct answer d. The budgeted indirect cost rate would be \$48 as shown below.

$$(\$5,000,000 + \$7,000,000) \div 250,000 = \underline{\$48 \text{ per hour}}$$

192. Correct answer b. Merlene's operating income is \$22,500 calculated as follows.

Sales (750 x \$200)	\$150,000
COGS (750 x \$90)	<u>67,500</u>
Contribution	82,500
Fixed period costs	15,000
Selling & administrative	<u>45,000</u>
Operating income	<u>\$ 22,500</u>

193. Correct answer d. The cost applied to each T-shirt is \$.8689 calculated as follows.

$$\begin{aligned}
 \text{Total seconds used} &= (50,000 + 30,000) (40) + (20,000 \times 20) \\
 &= 3,600,000 \\
 \text{Cost per second} &= \$78,200 \div 3,600,000 \\
 &= \$0.0217222 \\
 \text{Cost per T-shirt} &= 40 \times \$0.0217222 \\
 &= \underline{\underline{\$.868888}}
 \end{aligned}$$

194. Correct answer a. Dremmon's operating income was \$21,500 calculated as follows.

Sales (750 x \$200)	\$150,000
COGS [750 x (\$90 + \$20)]	82,500
Underapplied fixed cost (50 x \$20)	1,000
Selling & administrative	<u>45,000</u>
Operating income	<u>\$ 21,500</u>

195. Correct answer b. Chassen's finished goods inventory would total \$70,000 as absorption costing includes both variable (\$5.00) and fixed (\$2.00) manufacturing costs (\$7.00 x 10,000 units).

196. Correct answer c. Weisman's operating income using absorption costing was \$15,300 calculated as follows.

Sales (900 x \$100)	\$90,000
COGS [900 x (\$30 + \$20 + \$10 + \$5)]	58,500
Variable selling (900 x \$12)	10,800
Fixed selling	3,600
Fixed administrative	<u>1,800</u>
Operating income	<u>\$15,300</u>

197. Correct answer b. The difference between variable and absorption costing is the treatment of fixed manufacturing overhead. All fixed manufacturing overhead is expensed during the period using variable resulting in lower operating income. The difference is the fixed manufacturing overhead that is included in inventory when using absorption costing.

198. Correct answer a. Mill's absorption costing income would be \$2,400 lower than variable income because 800 units that had been previously inventoried were sold. These 800 units times \$3.00 of fixed manufacturing overhead unit cost accounts for the \$2,400.

199. Correct answer a. Absorption costing would include factory insurance and direct labor as product costs, expensing only shipping costs as period costs. Variable costing would include only direct labor as product cost and expense the other two costs.

200. Correct answer c. Fixed manufacturing overhead is applied to each product at the rate of \$20 (\$100,000 ÷ 5,000). If Troughton manufactures an additional 1,500 units, fixed manufacturing overhead would be over-applied by \$30,000 (1,500 x \$20). As stated in the problem, the company would reduce the cost of goods sold by the amount of over-applied overhead, thus increasing operating income by \$30,000 to the desired \$50,000.

201. Correct answer a. Variable costing, also call direct costing, includes all variable manufacturing costs in inventory, e.g., direct materials, direct labor, and variable overhead.

202. Correct answer d. Xylon's internal income figures would vary closely with sales because fixed overhead costs are treated as period costs when using variable costing. Under absorption costing, all overhead costs are attached to the units produced; there, some fixed costs are inventoried for those units produced but not sold.

203. Correct answer a. The value of Bethany's inventory is \$5,000,000, equal to the variable manufacturing cost.
204. Correct answer c. Donaldson's operating income based on variable costing is \$14,800 calculated as follows.

Sales (900 x \$100)	\$90,000
COGS [900 x (\$30 + \$20 + \$10)]	54,000
Fixed manufacturing (1,000 x \$5)	5,000
Variable selling (900 x \$12)	10,800
Fixed selling	3,600
Fixed administrative	<u>1,800</u>
Operating income	<u>\$14,800</u>

205. Correct answer d. Robinson produced 1,250 units based on the difference between the variable costing income and absorption costing income.

Income difference	\$9,500 - \$9,125	=	\$375
Units of fixed O/H	\$375 ÷ \$1.50	=	250 inventory units
Units produced	1,000 sales + 250 inventory	=	<u>1,250 units</u>

206. Correct answer a. Using variable costing, fixed overhead is treated as a period cost rather than a product costs that becomes part of inventory. It can be argued that this is more appropriate as the fixed costs of equipment, space, etc. should not be inventoried but expensed annually.
207. Correct answer d. Because fixed manufacturing overhead is included in inventory, finished goods inventory will be higher under absorption costing than when using variable costing where fixed manufacturing is expensed.
208. Correct answer d. The allocation of common costs to joint products is for financial reporting purposes, basically inventory costing and computing the cost of goods sold.
209. Correct answer c. By-products have a lower sales value than do joint or main products.
210. Correct answer a. Joint products generally have a higher sales value than by-products.
211. Correct answer c. Separable production cost method is not a method for allocating joint costs.

212. Correct answer a. The total costs for producing Giant are \$5,600 calculated as follows.

Joint cost allocation:	<u>Giant</u>	<u>Mini</u>	<u>Total</u>
Sales value	\$10,200	\$800	\$11,000
Less further processing	<u>1,000</u>	<u>--</u>	<u>1,000</u>
Net realizable value	\$ 9,200	\$800	\$10,000
% allocation	92%	8%	
Giant joint cost:	\$5,000 x 92%	\$4,600	
Cost to process further	<u>1,000</u>		
Total cost	<u>\$5,600</u>		

213. Correct answer a. The per gallon cost of Big is \$5.63 calculated as follows.

Joint cost allocation:	<u>Big</u>	<u>Mini</u>	<u>Total</u>
Sales value	\$7,200	\$800	\$8,000
% allocation	90%	10%	
Cost per unit of Big	90% x \$5,000 =	\$4,500	
	\$4,500 ÷ 800 =	<u>\$5.625 /unit</u>	

214. Correct answer d. The joint cost per unit of Product C is \$3.78 calculated as follows.

Net realizable value:			
Product A	20,000 x (\$5.00 - \$.70)	=	\$ 86,000
Product B	30,000 x (\$6.00 - \$3.00)	=	90,000
Product C	50,000 x (\$7.00 - \$1.72)	=	<u>264,000</u>
Total			\$440,000
Product C allocation	\$264,000 ÷ \$440,000	=	60%
	\$315,000 x 60%	=	\$189,000
Unit joint cost	\$189,000 ÷ 50,000	=	<u>\$3.78</u>

215. Correct answer a. If Zinten is produced, income would increase by \$2,000 calculated as follows.

$$\begin{aligned}
 \text{Change in income:} &= \text{Xylo} - \text{Zinten sales differential} - \text{Additional cost} \\
 &= [2,000 \times (\$15 - \$12)] - \$4,000 \\
 &= \$6,000 - \$4,000 \\
 &= \underline{\$2,000}
 \end{aligned}$$

216. Correct answer c. Abnormal spoilage is spoilage that should not arise under efficient production conditions and is written off as a loss in the period in which it is detected. Therefore, there would be no effect on the unit manufacturing cost of Job 532 but operating income would decrease.

217. Correct answer b. Baldwin's annual budgeted overhead is \$600,000 calculated as follows.

$$\begin{aligned}
 \text{Overhead cost per unit} & \$4.30 - (\$1,000 \div 1,000) - (\$1,500 \div 1,000) = \$1.80 \\
 \text{Overhead hours per unit} & 450 \div 1,000 = .45 \text{ hr.} \\
 \text{Overhead budget per unit} & \$1.80 \div .45 = \$4.00 \\
 \text{Total overhead budget} & 150,000 \times \$4.00 = \underline{\$600,000}
 \end{aligned}$$

218. Correct answer b. Total overhead applied to Job #231 is \$303 as shown below.

$$\begin{aligned}
 \text{Tooling overhead/hr.} & \$8,625 \div 460 \text{ hours} = \$18.75 \\
 \text{Fabricating overhead/hr.} & \$16,120 \div 620 \text{ hours} = \$26.00 \\
 \text{Job \#231 overhead} & (\$18.75 \times 12) + (\$20.00 \times 3) = \underline{\$303.00}
 \end{aligned}$$

219. Correct answer d. The weighted average inventory cost per unit completed in October is \$4.00 calculated as follows.

$$\begin{aligned}
 \text{Equivalent units:} & \begin{array}{r} \text{Units transferred out} & 27,000 \\ \text{Ending inventory (3,000 x .5)} & \underline{1,500} \\ \text{Total} & 28,500 \end{array} \\
 \text{Cost incurred:} & \$4,300 + \$39,700 + \$70,000 = \$114,000 \\
 \text{Unit cost:} & \$114,000 \div 28,500 = \underline{\$4.00/\text{unit}}
 \end{aligned}$$

220. Correct answer c. The total raw material cost in ending inventory is \$60 calculated as follows. Since material is added at the beginning of the manufacturing process, all units are 100% complete with regard to material.

$$\begin{aligned}
 \text{Material cost} &= \$120 + \$540 \\
 &= \$660 \\
 \text{Unit cost} &= \$660 \div 110 \text{ units} \\
 &= \$6.00 \\
 \text{EI raw material} &= \$6.00 \times 10 \text{ units} \\
 &= \underline{\$60}
 \end{aligned}$$

221. Correct answer d. Normal spoilage is allocated to the units produced during the period while abnormal spoilage is treated as a period cost.



222. Correct answer b. Normal spoilage should be part of the normal cost of manufacturing goods and should be charged to good units produced. Abnormal spoilage, not a part of normal operations, should be expensed as a period cost when detected.

223. Correct answer b. Southwood would transfer 16,000 units to finished goods inventory at a cost of \$154,850 as shown below.

$$\begin{aligned}
 \text{Inventory cost} &= \text{Cost of good units} + \text{Cost of normal spoilage} \\
 &= [16,000 \times (\$3.50 + \$6.00)] + \{300 \times (\$3.50 + \$6.00)\} \\
 &= \$152,000 + \$2,850 \\
 &= \underline{\underline{\$154,850}}
 \end{aligned}$$

224. Correct answer a. The 65,000 units that were started and completed during the month represent the equivalent units for Material B. Material B was previously added to the beginning work-in-process and the ending work-in-process had not yet reached 80% where Material B would have been added.

225. Correct answer c. Oster's October manufacturing cost should be assigned \$1,155,000 to production completed and \$235,000 to work-in-process inventory calculated as follows.

$$\begin{aligned}
 \text{Material at 100\%} &= (\$700,000 + \$40,000) \div (60,000 + 20,000) \\
 &= \$740,000 \div 80,000 \\
 &= \$9.25/\text{unit} \\
 \text{Equivalent conversion units} &= 60,000 + (20,000 \times .25) \\
 &= 65,000 \text{ units} \\
 \text{Conversion cost} &= (\$32,500 + \$617,500) \div 65,000 \\
 &= \$10/\text{unit} \\
 \text{Cost of production} &= 60,000 \times (\$9.25 + \$10) \\
 &= \underline{\underline{\$1,155,000}} \\
 \text{Cost of work-in-process} &= (20,000 \times \$9.25) + (5,000 \times \$10) \\
 &= \underline{\underline{\$235,000}}
 \end{aligned}$$

226. Correct answer d. The equivalent units used to assign material costs is 100,000 consisting of the 30,000 in beginning inventory and the 70,000 units started during the month. The equivalent units used to assign conversion costs is 82,000 consisting of 12,000 units (30,000 x 40%) in beginning inventory and the 70,000 units started during the month.

227. Correct answer b. The total conversion cost transferred to the next department is \$1,600 calculated as follows.

Equivalent conversion units	=	100 + (10 x 40%)
	=	104 units
Conversion costs	=	\$180 + \$1,484
	=	\$1,664
Unit conversion cost	=	\$1,664 ÷ 104
	=	\$16
Cost transferred	=	\$1,664 – (4 x \$16)*
	=	<u>\$1,600</u>

\*Ending work-in-process equivalent units

228. Correct answer d. Krause's equivalent units for conversion costs total 92 calculated as follows.

Beginning WIP Inventory:	20 units x (100% - 60%)	=	8 units
December units – Ending WIP:	90 units – [10 x (100% - 40%)]	=	84 units
Total			<u>92 units</u>

229. Correct answer a. Jones' equivalent units for conversion costs total 87,300 calculated as follows.

Units started in August (X):	=	10,000 + X – 8,000 = 90,000
	=	88,000 units
Plus Beginning WIP Inv.	=	10,000 x (100% - 75%)
	=	2,500 units
Less Ending WIP Inv.	=	8,000 x (100% - 60%)
	=	3,200 units
Total Equivalent Units	=	88,000 + 2,500 - 3,200
	=	<u>87,300 units</u>

230. Correct answer b. Waller's equivalent units for material in ending work-in-process inventory total 8,800 as shown below.

$$22,000 \text{ units} \times 40\% \text{ material} = \underline{8,800 \text{ units}}$$

231. Correct answer d. Robotics painting would be machine-based and would logically be allocated to products on the basis of machine hours. The other three options would more appropriately be allocated on the basis of direct labor or charged to overhead.
232. Correct answer c. Activity-based costing is an approach to costing that focuses on cost drivers. It uses these drivers to assign costs to products and services. As a result, a company would normally gain insight into the causes of cost.
233. Correct answer d. Using activity-based costing, the cost of materials is one of the costs that needs to be allocated based on the cost driver, e.g., the number of units used per product.

234. Correct answer b. Using activity-based costing, the cost to manufacture one ultrasound machine is \$264 calculated as follows.

Cost per engineering change:	$\$6,000 \div (2 + 1)$	=	\$2,000
Material handling per part:	$\$5,000 \div (400 + 600)$	=	\$5
Cost per product setup:	$\$3,000 \div (8 + 7)$	=	\$200
Ultrasound direct material ( $\$8,000 \div 100$ )			\$ 80
Ultrasound direct labor ( $\$12,000 \div 100$ )			120
Material handling [ $(600 \div 100) \times \$5$ ]			30
Engineering change ( $\$2,000 \div 100$ )			20
Setups [ $(\$200 \div 100) \times 7$ ]			<u>14</u>
Manufacturing cost			<u>\$264</u>

235. Correct answer c. The muffins are \$1,925 more profitable as shown below.

Cost of muffin delivery:	$[(150 \times 10) \div 60] \times \$20$	=	\$500
Cost of cheesecake delivery:	$[(85 \times 15) \div 60] \times \$20$	=	\$425
Muffin profit:	$\$53,000 - \$26,000 - \$500$	=	\$26,500
Cheesecake profit:	$\$46,000 - \$21,000 - \$425$	=	<u>24,575</u>
Profit difference			<u>\$ 1,925</u>

236. Correct answer a. The per unit overhead cost allocation of receiving costs for product A is \$3.75 as shown below.

Receiving costs per order:	$\$450,000 \div (50 + 150)$	=	\$2,250
Per unit of Product A:	$(50 \times \$2,250) \div 30,000$	=	<u>\$3.75</u>

237. Correct answer d. Activity-based costing generally uses a greater number of allocation bases or cost drivers and therefore results in more accurate costing.
238. Correct answer b. Since it is difficult to assign quantities and costs of items such as screws and glue to specific products, they are generally charged to factory overhead.
239. Correct answer d. Only in the situation where all overhead costs were expensed, e.g., zero inventory balances, would the reported net income be the same.
240. Correct answer c. Homogenous cost pools are those in which all of the costs have the same or similar cause-and-effect or benefits received relationship with the cost allocation base.

241. Correct answer b. The Tool Department overhead applied to Job #231 is \$197.50 calculated as follows.

Tooling overhead per hour:	$\$8,690 \div 440 \text{ hrs.}$	=	\$19.75
Job #231 overhead:	$\$19.75 \times 10 \text{ hrs.}$	=	<u>\$197.50</u>

242. Correct answer c. The overhead applied to a job incurring 20 hours of direct labor is \$140 as shown below.

Total budgeted direct labor hours:	$\$50,000 \div \$5$	=	10,000 hrs.
Overhead cost/direct labor hour:	$\$70,000 \div 10,000$	=	\$7 per hr.
Overhead cost for 20 hours:	$20 \times \$7$	=	<u>\$140</u>

243. Correct answer b. Statements I and IV would apply. The factory overhead rate is likely increased as expenses such as depreciation have increased. The increase in automation makes it more difficult to respond to economic changes as the company cannot simply layoff or hire workers. Statements II and III are incorrect as machine hours would be more appropriate and Haney will still be able to calculate labor variances.

244. Correct answer d. Allocation on the basis of the number of employees would have the least negative impact on the Financial Consulting Division as the division has only 28% of the total employees while it has 30% of revenues and 30% of variable expenses.

245. Correct answer c. The engineering cost per unit of Product B is \$15 calculated as follows.

Engineering cost per order:	$\$300,000 \div (12 + 18)$	=	\$10,000
Engineering cost per Product B:	$\$10,000 \times 18$	=	\$180,000
Cost per unit of Product B:	$\$180,000 \div 12,000$	=	<u>\$15.00</u>

246. Correct answer d. The dual-rate cost-allocation method classifies costs in each cost pool into two subcost pools, a variable-cost subpool and a fixed cost subpool, with each of these subpools having a different cost allocation base.

247. Correct answer d. If the cost of legal services is allocated on the basis of usage, departments will be very careful about usage. To encourage usage, the cost should be absorbed as a corporate expense.

248. Correct answer a. Allocating service department costs to production departments is most likely to cause production managers to be more careful about the use of services and not request excessive service.

249. Correct answer a. Depending on the step-down sequence used, different allocation of support departments to operating departments will result. Therefore, the correct response is direct and reciprocal methods only.

250. Correct answer d. The reciprocal method of departmental allocation explicitly includes the mutual services provided among all support departments. Therefore, the Information Systems Department would be allocated all users including the Personnel Department.

251. Correct answer b. The general step-down sequence begins with the support department that renders the greatest amount of service. There, the Personnel Department would be first and the Information Systems Department would not be allocated to the Personnel Department.
252. Correct answer d. The reciprocal allocation method allocates costs by explicitly including the mutual services provided among support departments and allows for the full incorporation of interdepartmental relationships.
253. Correct answer b. Using the direct method of allocation, only the hours of the production departments would be included in the allocation base ( $3600 + 1800 + 2700 = 8100$ ).
254. Correct answer c. Total overhead in the Machining Department is \$442,053 as presented below.

Machining overhead	\$200,000
Maintenance ( $\$360,000 \times .5$ )	180,000
Systems [ $(\$95,000 + \$36,000^*) \times .473687^{**}$ ]	<u>62,053</u>
Total overhead	<u>\$442,053</u>

\*Maintenance allocated to Systems ( $\$360,000 \times 10\%$ )

\*\* $1.05 \times 45\%$

255. Correct answer c. Using the direct method of cost allocation, all support departments are allocated directly to production departments. Relationships between support departments are not included in the allocation.
256. Correct answer d. Using the step-down method, Logo should allocate \$20,000 of Systems to Facilities and \$24,000 of Facilities to Machining as shown below.

% allocation Systems to Facilities:	$900 \div (9,300 - 300)$	=	10%
Allocation	$\$200,000 \times 10\%$	=	<u>\$20,000</u>
% allocation Facilities to Mach.	$2,000 \div (11,600 - 600 - 1,000)$	=	20%
Allocation	$(\$100,000 + \$20,000^*) \times 20\%$	=	<u>\$24,000</u>

\*Systems to Facilities allocation

257. Correct answer d. The total overhead allocated by the Machining Department to Adam's product is \$445,000 calculated as follows.

% allocation Maint. to Mach.:	$50\% \div (40\% + 50\%)$	=	.555
Allocation	$.555 \times \$360,000$	=	\$199,800
% allocation Systems to Mach.:	$45\% \div (45\% + 50\%)$	=	.4736842
Allocation	$.4736842 \times \$95,000$	=	\$45,200
Total allocation	$\$199,800 + \$45,200 + \$200,000$	=	<u>\$445,000</u>

258. Correct answer a. The use of just-in-time production generally involves developing relationships with a minimum number of suppliers that reliably deliver high quality products.

259. Correct answer d. According to the theory of constraints, increasing the efficiency of operations at non-bottleneck machines will make the slowdowns at bottlenecks worse as it will increase the traffic at bottlenecks.
260. Correct answer b. A company must first locate the source of the production constraint before it can effectively work to increase production capacity.
261. Correct answer c. In conventional financial statements, customer service costs are generally part of sales and administrative costs and not associated with a product. In value-chain statements, customer service is treated as part of the value chain and therefore associated with product cost.
262. Correct answer a. In option A, the functions are in the proper order while in the other options the functions are out of order, e.g., in option B, production design must precede production.
263. Correct answer d. Activities I and III are the only activities that actually increase the value of the product and would, therefore, be classified as value-added activities.
264. Correct answer c. A major disadvantage of business process reengineering is that as processes are changed to be more efficient, the internal controls that were established previously can be ignored or overlooked and may not be replaced with new controls.
265. Correct answer d. Retail Partners would benefit from all of these benchmarking techniques as all would identify best practices.
266. Correct answer a. Option A does not compare the business unit to any other standard, e.g., best practice, and is not an example of benchmarking standards.
267. Correct answer c. Prevention costs include Design Engineering (\$300,000), Supplier Evaluation (\$240,000), and Labor Training (\$150,000) for a total of \$690,000. All of these activities would likely take place prior to production to improve quality and prevent costly errors.
268. Correct answer b. Appraisal costs are incurred to detect individual units that do not conform to specifications, e.g., inspecting raw materials.
269. Correct answer b. Appraisal costs are incurred to detect individual units that do not conform to specifications, e.g., product testing costs.
270. Correct answer d. External failure costs are incurred by non-conforming products after shipment to customers. Product field testing would occur during the design phase and therefore prior to shipment.
271. Correct answer a. Internal failure costs are incurred by non-conforming products prior to shipment, e.g., the cost to rework defective units.

## **Section E: Internal Controls**

272. Correct answer d. One of the main objectives of internal controls is to provide reasonable assurance of reliability of financial reporting (financial statement assertions).

273. Correct answer d. The benefits of internal controls must always exceed the costs of implementing them. Implementing a system of absolute assurance is overly costly; thus only reasonable assurance can be obtained.
274. Correct answer c. Cashier prepares deposit slip for all cash receipts received. This action involves two functions that are not segregated: custody of assets and recording of transactions. In addition, the summary is not done in a timely manner.
275. Correct answer d. In order to properly segregate duties within the computer department, the responsibility to reprocess the errors detected during processing of the data should be given to the data control group and not to department manager, who should have access to review transactions, but not process transactions; nor to systems analyst, who should have access to view and analyze transactions, but not process transactions, and not to the computer programmer, who should have access to programs, not transactions.
276. Correct answer b. Direct deposit of pay in lieu of distribution of physical paychecks is an example of an effective safeguarding control that limits access to the organization's assets to authorized personnel.
277. Correct answer a. Policies of strong internal control, segregation of duties, and requiring employees to take vacations is an effective way of deterring fraud. In addition, periodic rotation of employees would also strengthen the control. These practices help prevent collusion and decrease the opportunity for employees to hide fraudulent behavior.
278. Correct answer a. Foreign Corrupt Practices Act of 1977 does not require a public company to sign an agreement that it will abide by the Act, however if the company does not abide by the Act, the company may be assessed fines up to \$2,000,000 and imprisonment for up to 5 years.
279. Correct answer c. The principal purpose of Foreign Corrupt Practices Act of 1977 was to prevent the bribery of foreign officials, foreign political parties or candidates for political office in the foreign country by U.S. firms seeking to do business overseas.
280. Correct answer c. The responsibility of Internal Audit Function is not only to identify the control weaknesses during the audit, but to follow-up on the audit findings to make sure the issues have been resolved.
281. Correct answer d. Internal auditors are often looking for significant or unexpected variances in account balances and investigate these. All of the methods listed - Cost Variance Analysis, Flexible Budgets and Activity-based Management – can assist internal auditors in such variance analyses, except for joint cost allocation, which is a method of allocating costs to products, and does not help with variance analysis.
282. Correct answer b. The objective of compliance testing is ensuring conformity with laws, regulations and contracts. This includes Federal and State laws.
283. Correct answer d. One of the objectives of the operational audit is to ensure efficient and economic operations and the effectiveness with which these operations achieve their objectives. This is not an objective of the compliance audit that ensures compliance with laws or the information system audit that check the systems' controls.

284. Correct answer d. One of the objectives of the operational audit is to ensure efficient and economic operations and the effectiveness with which these operations achieve their objectives. This is not an objective of the compliance audit that ensures compliance with laws or the financial statements audit that checks to ensure that financial statements are not misstated.
285. Correct answer c. Viruses are computer programs that propagate themselves from one computer to another without the user's knowledge. Trojan horses are restricted to a specific computer, these are voluntarily installed as regular programs, but, behind the scenes, they contain codes that a hacker can activate later to take over the computer .
286. Correct answer a. Key verification is one of the data controls. A record's key is the group of values that uniquely identify the record. No application process should be able to alter the data in these key fields.
287. Correct answer c. Compatibility check is most appropriate control to verify that the user is authorized to execute a particular on-line transaction. It verifies the user access information, such as user ID, password and security profile is correct.
288. Correct answer b. Single sign-on, although a great convenience to users, because they don't need to remember multiple passwords and user-ids and can access all IT resources using single sign-on data. This however, becomes a single-point of failure, if the sign-on does not work and the user is not able to access any of the IT resources.
289. Correct answer d. Computer Operator executes programs and maintains custody of programs and files. This action involves two functions that are not segregated: recording of transactions and custody of assets.
290. Correct answer c. Encryption technology converts data into a code. Unauthorized users may still be able to access the data, but without the encryption key, they will be unable to decode the information; thus encrypting confidential data is a secure way of transmitting it over the Internet.
291. Correct answer c. Encryption technology converts data into a code. Unauthorized users may still be able to access the data, but without the encryption key, they will be unable to decode the information. Two major types of encryption software exist: public key and private key. An example of authentication is assigning each user a unique identifier and password. Not even information security personnel should be able to view unencrypted passwords.
292. Correct answer c. Flowcharting is the representation of a process using pictorial symbols. A document flowchart would be an effective way to visualize how the document (a copy of a shipping order) flows through various departments.
293. Correct answer c. Operating system should be the first one to be restored at an alternate site so the operations can continue with minimum of amount of interruption; while other systems, such as decision support, online system, can be restored later.





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CMA Part 2 – Financial Decision Making

Examination Practice Questions

## CMA Part 2 – Financial Decision Making

### Examination Practice Questions

Answers to Examination Practice Questions on page 315

#### Section A: Financial Statement Analysis

1. CSO: 2A1a LOS: 2A1a

Gordon has had the following financial results for the last four years.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Sales	\$1,250,000	\$1,300,000	\$1,359,000	\$1,400,000
Cost of goods sold	750,000	785,000	825,000	850,000
Gross profit	500,000	515,000	534,000	550,000
Inflation factor	1.00	1.03	1.07	1.10

Gordon has analyzed these results using vertical common-size analysis to determine trends. The performance of Gordon can **best** be characterized by which one of the following statements?

- a. The common-size gross profit percentage has decreased as a result of an increasing common-size trend in cost of goods sold.
- b. The common-size trend in sales is increasing and is resulting in an increasing trend in the common-size gross profit margin.
- c. The common-size trend in cost of goods sold is decreasing which is resulting in an increasing trend in the common-size gross profit margin.
- d. The increased trend in the common-size gross profit percentage is the result of both the increasing trend in sales and the decreasing trend in cost of goods sold.

2. *CSO: 2A2a LOS: 2A2a*

Broomall Corporation has decided to include certain financial ratios in its year-end annual report to shareholders. Selected information relating to its most recent fiscal year is provided below.

• Cash	\$10,000
• Accounts receivable	20,000
• Prepaid expenses	8,000
• Inventory	30,000
• Available-for-sale securities	
-At cost	9,000
-Fair value at year end	12,000
• Accounts payable	15,000
• Notes payable (due in 90 days)	25,000
• Bonds payable (due in 10 years)	35,000
• Net credit sales for year	220,000
• Cost of goods sold	140,000

Broomall's working capital at year end is

- \$40,000.
- \$37,000.
- \$28,000.
- \$10,000.

3. *CSO: 2A2a LOS: 2A2b*

All of the following are affected when merchandise is purchased on credit **except**

- total current assets.
- net working capital.
- total current liabilities.
- current ratio.

4. *CSO: 2A2a LOS: 2A2a*

Birch Products Inc. has the following current assets.

Cash	\$ 250,000
Marketable securities	100,000
Accounts receivable	800,000
Inventories	<u>1,450,000</u>
Total current assets	<u>\$2,600,000</u>

If Birch's current liabilities are \$1,300,000, the firm's

- a. current ratio will decrease if a payment of \$100,000 cash is used to pay \$100,000 of accounts payable.
- b. current ratio will not change if a payment of \$100,000 cash is used to pay \$100,000 of accounts payable.
- c. quick ratio will decrease if a payment of \$100,000 cash is used to purchase inventory.
- d. quick ratio will not change if a payment of \$100,000 cash is used to purchase inventory.

5. *CSO: 2A2a LOS: 2A2a*

Shown below are beginning and ending balances for certain of Grimaldi Inc.'s accounts.

	<u>January 1</u>	<u>December 31</u>
Cash	\$ 48,000	\$ 62,000
Marketable securities	42,000	35,000
Accounts receivable	68,000	47,000
Inventory	125,000	138,000
Plant & equipment	325,000	424,000
Accounts payable	32,000	84,000
Accrued liabilities	14,000	11,000
7% bonds payable	95,000	77,000

Grimaldi's acid test ratio or quick ratio at the end of the year is

- a. 0.83.
- b. 1.02.
- c. 1.15.
- d. 1.52.

6. *CSO: 2A2a LOS: 2A2b*

Davis Retail Inc. has total assets of \$7,500,000 and a current ratio of 2.3 times before purchasing \$750,000 of merchandise on credit for resale. After this purchase, the current ratio will

- a. remain at 2.3 times.
- b. be higher than 2.3 times.
- c. be lower than 2.3 times.
- d. be exactly 2.53 times. }

7. *CSO: 2A2a LOS: 2A2b*

Markowitz Company increased its allowance for uncollectable accounts. This adjustment will

- a. increase the acid test ratio.
- b. increase working capital.
- c. reduce debt-to-asset ratio.
- d. reduce the current ratio.

8. CSO: 2A2a LOS: 2A2a

Shown below are selected data from Fortune Company's most recent financial statements.

Marketable securities	\$10,000
Accounts receivable	60,000
Inventory	25,000
Supplies	5,000
Accounts payable	40,000
Short-term debt payable	10,000
Accruals	5,000

What is Fortune's net working capital?

- a. \$35,000.
- b. \$45,000.
- c. \$50,000.
- d. \$80,000.

9. CSO: 2A2a LOS: 2A2b

Garstka Auto Parts must increase its acid test ratio above the current 0.9 level in order to comply with the terms of a loan agreement. Which one of the following actions is **most** likely to produce the desired results?

- a. Expediting collection of accounts receivable.
- b. Selling auto parts on account.
- c. Making a payment to trade accounts payable.
- d. Purchasing marketable securities for cash.

10. CSO: 2A2a LOS: 2A2b

The owner of a chain of grocery stores has bought a large supply of mangoes and paid for the fruit with cash. This purchase will adversely impact which one of the following?

- a. Working capital.
- b. Current ratio.
- c. Quick or acid test ratio.
- d. Price earnings ratio.

11. CSO: 2A2a LOS: 2A2a

Selected financial data for Boyd Corporation are shown below.

	<u>January 1</u>	<u>December 31</u>
Cash	\$ 48,000	\$ 62,000
Accounts receivable (net)	68,000	47,000
Trading securities	42,000	35,000
Inventory	125,000	138,000
Plant and equipment (net)	325,000	424,000
Accounts payable	32,000	84,000
Accrued liabilities	14,000	11,000
Deferred taxes	15,000	9,000
Long-term bonds payable	95,000	77,000

Boyd's net income for the year was \$96,000. Boyd's current ratio at the end of the year is

- a. 1.55.
- b. 1.71.
- c. 2.71.
- d. 2.97.

12. CSO: 2A2a LOS: 2A2a

When reviewing a credit application, the credit manager should be **most** concerned with the applicant's

- a. profit margin and return on assets.
- b. price-earnings ratio and current ratio.
- c. working capital and return on equity.
- d. working capital and current ratio.

13. CSO: 2A2a LOS: 2A2b

Both the current ratio and the quick ratio for Spartan Corporation have been slowly decreasing. For the past two years, the current ratio has been 2.3 to 1 and 2.0 to 1. During the same time period, the quick ratio has decreased from 1.2 to 1 to 1.0 to 1. The disparity between the current and quick ratios can be explained by which one of the following?

- a. The current portion of long-term debt has been steadily increasing.
- b. The cash balance is unusually low.
- c. The accounts receivable balance has decreased.
- d. The inventory balance is unusually high.

14. *CSO: 2A2a LOS: 2A2a*  
The acid test ratio shows the ability of a company to pay its current liabilities without having to
- reduce its cash balance.
  - borrow additional funds.
  - collect its receivables.
  - liquidate its inventory.
15. *CSO: 2A2a LOS: 2A2a*  
All of the following are included when calculating the acid test ratio **except**
- six-month treasury bills.
  - prepaid insurance.
  - accounts receivable.
  - 60-day certificates of deposit.
16. *CSO: 2A2a LOS: 2A2a*  
Dedham Corporation has decided to include certain financial ratios in its year-end annual report to shareholders. Selected information relating to its most recent fiscal year is provided below.
- |                                   |          |
|-----------------------------------|----------|
| • Cash                            | \$10,000 |
| • Accounts receivable             | 20,000   |
| • Prepaid expenses                | 8,000    |
| • Inventory                       | 30,000   |
| • Available-for-sale securities   |          |
| -At cost                          | 9,000    |
| -Fair value at year end           | 12,000   |
| • Accounts payable                | 15,000   |
| • Notes payable (due in 90 days)  | 25,000   |
| • Bonds payable (due in 10 years) | 35,000   |
- Dedham's quick (acid-test) ratio at year end is
- 2.00 to 1.
  - 1.925 to 1.
  - 1.80 to 1.
  - 1.05 to 1.

17. CSO: 2A2a LOS: 2A2b

If a company has a current ratio of 2.1 and pays off a portion of its accounts payable with cash, the current ratio will

- a. decrease.
- b. increase.
- c. remain unchanged.
- d. move closer to the quick ratio.

18. CSO: 2A2b LOS: 2A2e

The capital structure of four corporations is as follows.

	Corporation			
	<u>Sterling</u>	<u>Cooper</u>	<u>Warwick</u>	<u>Pane</u>
Short-term debt	10%	10%	15%	10%
Long-term debt	40%	35%	30%	30%
Preferred stock	30%	30%	30%	30%
Common equity	20%	25%	25%	30%

Which corporation is the most highly leveraged?

- a. Sterling.
- b. Cooper.
- c. Warwick.
- d. Pane.

19. CSO: 2A2b LOS: 2A2f

A summary of the Income Statement of Sahara Company is shown below.

Sales	\$15,000,000
Cost of sales	9,000,000
Operating expenses	3,000,000
Interest expense	800,000
Taxes	<u>880,000</u>
Net income	<u>\$ 1,320,000</u>

Based on the above information, Sahara's degree of financial leverage is

- a. 0.96.
- b. 1.36.
- c. 1.61.
- d. 2.27.



20. *CSO: 2A2b LOS: 2A2f*  
A degree of operating leverage of 3 at 5,000 units means that a
- 3% change in earnings before interest and taxes will cause a 3% change in sales.
  - 3% change in sales will cause a 3% change in earnings before interest and taxes.
  - 1% change in sales will cause a 3% change in earnings before interest and taxes.
  - 1% change in earnings before interest and taxes will cause a 3% change in sales.
21. *CSO: 2A2b LOS: 2A2e*  
Firms with high degrees of financial leverage would be **best** characterized as having
- high debt-to-equity ratios.
  - zero coupon bonds in their capital structures.
  - low current ratios.
  - high fixed-charge coverage.
22. *CSO: 2A2b LOS: 2A2e*  
The use of debt in the capital structure of a firm
- increases its financial leverage.
  - increases its operating leverage.
  - decreases its financial leverage.
  - decreases its operating leverage.
23. *CSO: 2A2b LOS: 2A2g*  
A financial analyst with Mineral Inc. calculated the company's degree of financial leverage as 1.5. If net income before interest increases by 5%, earnings to shareholders will increase by
- 1.50%.
  - 3.33%.
  - 5.00%.
  - 7.50%.
24. *CSO: 2A2b LOS: 2A2g*  
Which one of the following statements concerning the effects of leverage on earnings before interest and taxes (EBIT) and earnings per share (EPS) is **correct**?
- For a firm using debt financing, a decrease in EBIT will result in a proportionally larger decrease in EPS.
  - A decrease in the financial leverage of a firm will increase the beta value of the firm.
  - If Firm A has a higher degree of operating leverage than Firm B, and Firm A offsets this by using less financial leverage, then both firms will have the same variability in EBIT.
  - Financial leverage affects both EPS and EBIT, while operating leverage only effects EBIT.

25. CSO: 2A2b LOS: 2A2i

The Liabilities and Shareholders' Equity section of Mica Corporation's Statement of Financial Position is shown below.

	<u>January 1</u>	<u>December 31</u>
Accounts payable	\$ 32,000	\$ 84,000
Accrued liabilities	14,000	11,000
7% bonds payable	95,000	77,000
Common stock (\$10 par value)	300,000	300,000
Reserve for bond retirement	12,000	28,000
Retained earnings	<u>155,000</u>	<u>206,000</u>
Total liabilities and shareholders' equity	<u>\$608,000</u>	<u>\$706,000</u>

Mica's debt/equity ratio is

- a. 25.1%.
- b. 25.6%.
- c. 32.2%.
- d. 33.9%.

26. CSO: 2A2b LOS: 2A2y

Borglum Corporation is considering the acquisition of one of its parts suppliers and has been reviewing the pertinent financial statements. Specific data, shown below, has been selected from these statements for review and comparison with industry averages.

	<u>Bond</u>	<u>Rockland</u>	<u>Western</u>	<u>Industry</u>
Total sales (millions)	\$4.27	\$3.91	\$4.86	\$4.30
Net profit margin	9.55%	9.85%	10.05%	9.65%
Current ratio	1.32	2.02	1.96	1.95
Return on assets	11.0%	12.6%	11.4%	12.4%
Debt/equity ratio	62.5%	44.6%	49.6%	48.3%
Financial leverage	1.40	1.02	1.86	1.33

Borglum's objective for this acquisition is assuring a steady source of supply from a stable company. Based on the information above, select the strategy that would fulfill Borglum's objective.

- a. Borglum should not acquire any of these firms as none of them represents a good risk.
- b. Acquire Bond as both the debt/equity ratio and degree of financial leverage exceed the industry average.
- c. Acquire Rockland as both the debt/equity ratio and degree of financial leverage are below the industry average.
- d. Acquire Western as the company has the highest net profit margin and degree of financial leverage.

27. CSO: 2A2b LOS: 2A2i

Which one of the following is the **best** indicator of long-term debt paying ability?

- a. Working capital turnover.
- b. Asset turnover.
- c. Current ratio.
- d. Debt-to-total assets ratio.

28. CSO: 2A2b LOS: 2A2y

Easton Bank has received loan applications from three companies in the computer service business and will grant a loan to the company with the best prospect of fulfilling the loan obligations. Specific data, shown below, has been selected from these applications for review and comparison with industry averages.

	<u>CompGo</u>	<u>Astor</u>	<u>SysGen</u>	<u>Industry</u>
Total sales (millions)	\$4.27	\$3.91	\$4.86	\$4.30
Net profit margin	9.55%	9.85%	10.05%	9.65%
Current ratio	1.82	2.02	1.96	1.95
Return on assets	12.0%	12.6%	11.4%	12.4%
Debt/equity ratio	52.5%	44.6%	49.6%	48.3%
Financial leverage	1.30	1.02	1.56	1.33

Based on the information above, select the strategy that would fulfill Easton's objective.

- a. Easton should not grant any loans as none of these companies represents a good credit risk.
- b. Grant the loan to CompGo as all the company's data approximate the industry average.
- c. Grant the loan to Astor as both the debt/equity ratio and degree of financial leverage are below the industry average.
- d. Grant the loan to SysGen as the company has the highest net profit margin and degree of financial leverage.

29. CSO: 2A2b LOS: 2A2i

The following information has been derived from the financial statements of Boutwell Company.

Current assets	\$640,000
Total assets	990,000
Long-term liabilities	130,000
Current ratio	3.2 Times

The company's debt-to-equity ratio is

- a. 0.50 to 1.
- b. 0.37 to 1.
- c. 0.33 to 1.
- d. 0.13 to 1.

30. CSO: 2A2b LOS: 2A2j

The interest expense for a company is equal to its earnings before interest and taxes (EBIT). The company's tax rate is 40%. The company's times-interest earned ratio is equal to

- a. 2.0.
- b. 1.0.
- c. 0.6.
- d. 1.2.

31. CSO: 2A2b LOS: 2A2y

Marble Savings Bank has received loan applications from three companies in the auto parts manufacturing business and currently has the funds to grant only one of these requests. Specific data, shown below, has been selected from these applications for review and comparison with industry averages.

	<u>Bailey</u>	<u>Nutron</u>	<u>Sonex</u>	<u>Industry</u>
Total sales (millions)	\$4.27	\$3.91	\$4.86	\$4.30
Net profit margin	9.55%	9.85%	10.05%	9.65%
Current ratio	1.82	2.02	1.96	1.95
Return on assets	12.0%	12.6%	11.4%	12.4%
Debt/equity ratio	52.5%	44.6%	49.6%	48.3%
Financial leverage	1.30	1.02	1.56	1.33

Based on the information above, select the strategy that should be the **most** beneficial to Marble Savings.

- Marble Savings Bank should not grant any loans as none of these companies represents a good credit risk.
- Grant the loan to Bailey as all the company's data approximate the industry average.
- Grant the loan to Nutron as both the debt/equity ratio and degree of financial leverage are below the industry average.
- Grant the loan to Sonex as the company has the highest net profit margin and degree of financial leverage.

32. CSO: 2A2b LOS: 2A2y

Marge Halifax, chief financial officer of Strickland Construction, has been tracking the activities of the company's nearest competitor for several years. Among other trends, Halifax has noticed that this competitor is able to take advantage of new technology and bring new products to market more quickly than Strickland. In order to determine the reason for this, Halifax has been reviewing the following data regarding the two companies.

	<u>Strickland</u>	<u>Competitor</u>
Accounts receivable turnover	6.85	7.35
Return on assets	15.34	14.74
Times interest earned	15.65	12.45
Current ratio	2.11	1.23
Debt/equity ratio	42.16	55.83
Degree of financial leverage	1.06	1.81
Price/earnings ratio	26.56	26.15

On the basis of this information, which one of the following is the **best** initial strategy for Halifax to follow in attempting to improve the flexibility of Strickland?

- Seek cost cutting measures that would increase Strickland's profitability.
- Investigate ways to improve asset efficiency and turnover times to improve liquidity.
- Seek additional sources of outside financing for new product introductions.
- Increase Strickland's investment in short-term securities to increase the current ratio.

33. CSO: 2A2c LOS: 2A2I

Lowell Corporation has decided to include certain financial ratios in its year-end annual report to shareholders. Selected information relating to its most recent fiscal year is provided below.

• Cash	\$ 10,000
• Accounts receivable (end of year)	20,000
• Accounts receivable (beginning of year)	24,000
• Inventory (end of year)	30,000
• Inventory (beginning of year)	26,000
• Notes payable (due in 90 days)	25,000
• Bonds payable (due in 10 years)	35,000
• Net credit sales for year	220,000
• Cost of goods sold	140,000

Using a 365-day year, compute Lowell's accounts receivable turnover in days.

- 26.1 days.
- 33.2 days.
- 36.5 days.
- 39.8 days.

34. CSO: 2A2c LOS: 2A2I

Maydale Inc.'s financial statements show the following information.

Accounts receivable, end of Year 1	\$ 320,000
Credit sales for Year 2	3,600,000
Accounts receivable, end of Year 2	400,000

Maydale's accounts receivable turnover ratio is

- 0.10.
- 9.00.
- 10.00.
- 11.25.

35. CSO: 2A2c LOS: 2A2I

Zubin Corporation experiences a decrease in sales and the cost of goods sold, an increase in accounts receivable, and no change in inventory. If all else is held constant, what is the total effect of these changes on the receivables turnover and inventory ratios?

	<u>Inventory</u> <u>Turnover</u>	<u>Receivables</u> <u>Turnover</u>
a.	Increased;	Increased.
b.	Increased;	Decreased.
c.	Decreased;	Increased.
d.	Decreased;	Decreased.

36. CSO: 2A2c LOS: 2A2I

Peggy Monahan, controller, has gathered the following information regarding Lampasso Company.

	<u>Beginning of the year</u>	<u>End of the year</u>
Inventory	\$6,400	\$7,600
Accounts receivable	2,140	3,060
Accounts payable	3,320	3,680

Total sales for the year were \$85,900, of which \$62,400 were credit sales. The cost of goods sold was \$24,500.

Lampasso's inventory turnover ratio for the year was

- a. 3.2 times.
- b. 3.5 times.
- c. 8.2 times.
- d. 8.9 times.



37. CSO: 2A2c LOS: 2A2I

Garland Corporation's Income Statement for the year just ended is shown below.

Net sales		\$900,000
Cost of goods sold		
Inventory - beginning	\$125,000	
Purchases	<u>540,000</u>	
Goods available for sale	665,000	
Inventory - ending	<u>138,000</u>	
		<u>527,000</u>
Gross profit		373,000
Operating expenses		<u>175,000</u>
Income from operations		<u>\$198,000</u>

Garland's average inventory turnover ratio is

- a. 6.84.
- b. 6.52.
- c. 4.01.
- d. 3.82.

38. CSO: 2A2c LOS: 2A2I

Makay Corporation has decided to include certain financial ratios in its year-end annual report to shareholders. Selected information relating to its most recent fiscal year is provided below.

• Cash	\$ 10,000
• Accounts receivable (end of year)	20,000
• Accounts receivable (beginning of year)	24,000
• Inventory (end of year)	30,000
• Inventory (beginning of year)	26,000
• Notes payable (due in 90 days)	25,000
• Bonds payable (due in 10 years)	35,000
• Net credit sales for year	220,000
• Cost of goods sold	140,000

Makay's average inventory turnover for the year was

- a. 4.7 times.
- b. 5.0 times.
- c. 5.4 times.
- d. 7.9 times.

39. CSO: 2A2c LOS: 2A2I

Globetrade is a retailer that buys virtually all of its merchandise from manufacturers in a country experiencing significant inflation. Globetrade is considering changing its method of inventory costing from first-in, first-out (FIFO) to last-in, first-out (LIFO). What effect would the change from FIFO to LIFO have on Globetrade's current ratio and inventory turnover ratio?

- a. Both the current ratio and the inventory turnover ratio would increase.
- b. The current ratio would increase but the inventory turnover ratio would decrease.
- c. The current ratio would decrease but the inventory turnover ratio would increase.
- d. Both the current ratio and the inventory turnover ratio would decrease.

40. CSO: 2A2c LOS: 2A2I

Lancaster Inc. had net accounts receivable of \$168,000 and \$147,000 at the beginning and end of the year, respectively. The company's net income for the year was \$204,000 on \$1,700,000 in total sales. Cash sales were 6% of total sales. Lancaster's average accounts receivable turnover ratio for the year is

- a. 9.51.
- b. 10.15.
- c. 10.79.
- d. 10.87.

41. CSO: 2A2c LOS: 2A2m

Cornwall Corporation's net accounts receivable were \$68,000 and \$47,000 at the beginning and end of the year, respectively. Cornwall's condensed Income Statement is shown below.

Sales	\$900,000
Cost of goods sold	527,000
Operating expenses	<u>175,000</u>
Operating income	198,000
Income tax	<u>79,000</u>
Net income	<u>\$119,000</u>

Cornwall's average number of days' sales in accounts receivable (using a 360-day year) is

- a. 8 days.
- b. 13 days.
- c. 19 days.
- d. 23 days.

42. CSO: 2A2c LOS: 2A2m

The following financial information is given for Anjuli Corporation (in millions of dollars).

	<u>Prior Year</u>	<u>Current Year</u>
Sales	\$10	\$11
Cost of goods sold	6	7
Current Assets		
Cash	2	3
Accounts receivable	3	4
Inventory	4	5

Between the prior year and the current year, did the days sales in inventory and days sales in receivables for Anjuli increase or decrease? Assume a 365-day year.

	<u>Days Sales in Inventory</u>	<u>Days Sales in Receivables</u>
a.	Increased;	Increased.
b.	Increased;	Decreased.
c.	Decreased;	Increased.
d.	Decreased;	Decreased.

43. CSO: 2A2c LOS: 2A2o

On its year-end financial statements, Caper Corporation showed sales of \$3,000,000, net fixed assets of \$1,300,000, and total assets of \$2,000,000. The company's fixed asset turnover is

- a. 1.5 times.
- b. 43.3%.
- c. 2.3 times.
- d. 65%.

44. CSO: 2A2c LOS: 2A2l

The following information was obtained from a company's financial statements.

	<u>Beginning of the year</u>	<u>End of the year</u>
Inventory	\$6,400	\$7,600
Accounts receivable	2,140	3,060
Accounts payable	3,320	3,680

Total sales for the year were \$85,900, of which \$62,400 were credit sales. The cost of goods sold was \$24,500. The company's payable turnover was

- 6.7 times.
- 7.0 times.
- 16.9 times.
- 17.8 times.

45. CSO: 2A2d LOS: 2A2p

Douglas Company purchased 10,000 shares of its common stock at the beginning of the year for cash. This transaction will affect all of the following **except** the

- debt-to-equity ratio.
- earnings per share.
- net profit margin.
- current ratio.

46. CSO: 2A2d LOS: 2A2q

For the year just ended, Beechwood Corporation had income from operations of \$198,000 and net income of \$96,000. Additional financial information is given below.

	<u>January 1</u>	<u>December 31</u>
7% bonds payable	\$95,000	\$77,000
Common stock (\$10 par value)	300,000	300,000
Reserve for bond retirement	12,000	28,000
Retained earnings	155,000	206,000

Beechwood has no other equity issues outstanding. Beechwood's return on shareholders' equity for the year just ended is

- 19.2%.
- 19.9%.
- 32.0%.
- 39.5%.

47. CSO: 2A2d LOS: 2A2q

The assets of Moreland Corporation are presented below.

	<u>January 1</u>	<u>December 31</u>
Cash	\$ 48,000	\$ 62,000
Marketable securities	42,000	35,000
Accounts receivable	68,000	47,000
Inventory	125,000	138,000
Plant & equipment (net of accumulated depreciation)	325,000	424,000

For the year just ended, Moreland had net income of \$96,000 on \$900,000 of sales. Moreland's total asset turnover ratio is

- a. 1.27.
- b. 1.37.
- c. 1.48.
- d. 1.50.

48. CSO: 2A2d LOS: 2A2q

Interstate Motors has decided to make an additional investment in its operating assets which are financed by debt. Assuming all other factors remain constant, this increase in investment will have which one of the following effects?

	<u>Operating Income Margin</u>	<u>Operating Asset Turnover</u>	<u>Return on Operating Assets</u>
a.	Increase	No change	Increase.
b.	No change	Decrease	Decrease.
c.	No change	Increase	Decrease.
d.	Decrease	Decrease	Decrease.

49. CSO: 2A2d LOS: 2A2q

Colonie Inc. expects to report net income of at least \$10 million annually for the foreseeable future. Colonie could increase its return on equity by taking which of the following actions with respect to its inventory turnover and the use of equity financing?

	<u>Inventory Turnover</u>	<u>Use of Equity Financing</u>
a.	Increase;	Increase.
b.	Increase;	Decrease.
c.	Decrease;	Increase.
d.	Decrease;	Decrease.

50. CSO: 2A2e LOS: 2A2s

At the end of its fiscal year on December 31, 2000, Merit Watches had total shareholders' equity of \$24,209,306. Of this total, \$3,554,405 was preferred equity. During the 2001 fiscal year, Merit's net income after tax was \$2,861,003. During 2001, Merit paid preferred share dividends of \$223,551 and common share dividends of \$412,917. At December 31, 2001, Merit had 12,195,799 common shares outstanding and the company did not sell any common shares during the year. What was Merit Watch's book value per share on December 31, 2001?

- a. \$1.88.
- b. \$2.17.
- c. \$1.91.
- d. \$2.20.

51. CSO: 2A2e LOS: 2A2s

Donovan Corporation recently declared and issued a 50% stock dividend. This transaction will reduce the company's

- a. current ratio.
- b. book value per common share.
- c. debt-to-equity ratio.
- d. return on operating assets.

52. CSO: 2A2e LOS: 2A2r

The following information concerning Arnold Company's common stock was included in the company's financial reports for the last two years.

	<u>Year 2</u>	<u>Year 1</u>
Market price per share on December 31	\$60	\$50
Par value per share	10	10
Earnings per share	3	3
Dividends per share	1	1
Book value per share on December 31	36	34

Based on the price-earnings information, investors would **most likely** consider Arnold's common stock to

- a. be overvalued at the end of Year 2.
- b. indicate inferior investment decisions by management in Year 2.
- c. show a positive trend in growth opportunities in Year 2 compared to Year 1.
- d. show a decline in growth opportunities in Year 2 compared to Year 1.

53. CSO: 2A2e LOS: 2A2v

Bull & Bear Investment Banking is working with the management of Clark Inc. in order to take the company public in an initial public offering. Selected financial information for Clark is as follows.

Long-term debt (8% interest rate)	\$10,000,000
Common equity: Par value (\$1 per share)	3,000,000
Additional paid-in-capital	24,000,000
Retained earnings	6,000,000
Total assets	55,000,000
Net income	3,750,000
Dividend (annual)	1,500,000

If public companies in Clark's industry are trading at twelve times earnings, what is the estimated value per share of Clark?

- a. \$9.00.
- b. \$12.00.
- c. \$15.00.
- d. \$24.00.

54. CSO: 2A2e LOS: 2A2r

Morton Starley Investment Banking is working with the management of Kell Inc. in order to take the company public in an initial public offering. Selected information for the year just ended for Kell is as follows.

Long-term debt (8% interest rate)	\$10,000,000
Common equity: Par value (\$1 per share)	3,000,000
Additional paid-in-capital	24,000,000
Retained earnings	6,000,000
Total assets	55,000,000
Net income	3,750,000
Dividend (annual)	1,500,000

If public companies in Kell's industry are trading at a market to book ratio of 1.5, what is the estimated value per share of Kell?

- a. \$13.50.
- b. \$16.50.
- c. \$21.50.
- d. \$27.50.

55. CSO: 2A2e LOS: 2A2u

At the beginning of the year, Lewis Corporation had 100,000 shares of common stock outstanding. During the year, the following transactions occurred.

<u>Date</u>	<u>Transaction</u>
April 1	Issued 10,000 shares in exchange for land
July 1	Declared and distributed a 10% stock dividend
October 1	Purchased 5,000 shares of treasury stock

The number of shares that Lewis should use when computing earnings per share at the end of the year is

- a. 117,000.
- b. 116,000.
- c. 111,750.
- d. 106,250.

56. CSO: 2A2e LOS: 2A2u

Selected financial data for ABC Company is presented below.

- For the year just ended ABC has net income of \$5,300,000.
- \$5,500,000 of 7% convertible bonds were issued in the prior year at a face value of \$1,000. Each bond is convertible into 50 shares of common stock. No bonds were converted during the current year.
- 50,000 shares of 10% cumulative preferred stock, par value \$100, were issued in the prior year. Preferred dividends were not declared in the current year, but were current at the end of the prior year.
- At the beginning of the current year 1,060,000 shares of common stock were outstanding.
- On June 1 of the current year 60,000 shares of common stock were issued and sold.
- ABC's average income tax rate is 40%.

ABC Company's basic earnings per share for the current fiscal year is

- a. \$3.67.
- b. \$4.29.
- c. \$4.38.
- d. \$4.73.



57. *CSO: 2A2e LOS: 2A2r*  
Devlin Inc. has 250,000 shares of \$10 par value common stock outstanding. For the current year, Devlin paid a cash dividend of \$3.50 per share and had earnings per share of \$4.80. The market price of Devlin's stock is \$34 per share. Devlin's price/earnings ratio is
- a. 2.08.
  - b. 2.85.
  - c. 7.08.
  - d. 9.71.
58. *CSO: 2A2e LOS: 2A2r*  
At year-end, Appleseed Company reported net income of \$588,000. The company has 10,000 shares of \$100 par value, 6% preferred stock and 120,000 shares of \$10 par value common stock outstanding and 5,000 shares of common stock in treasury. There are no dividend payments in arrears, and the market price per common share at the end of the year was \$40. Appleseed's price-earnings ratio is
- a. 9.47.
  - b. 9.09.
  - c. 8.50.
  - d. 8.16.
59. *CSO: 2A2e LOS: 2A2r*  
Archer Inc. has 500,000 shares of \$10 par value common stock outstanding. For the current year, Archer paid a cash dividend of \$4.00 per share and had earnings per share of \$3.20. The market price of Archer's stock is \$36 per share. The average price/earnings ratio for Archer's industry is 14.00. When compared to the industry average, Archer's stock appears to be
- a. overvalued by approximately 25%.
  - b. overvalued by approximately 10%.
  - c. undervalued by approximately 10%.
  - d. undervalued by approximately 25%.
60. *CSO: 2A2e LOS: 2A2r*  
A steady drop in a firm's price/earnings ratio could indicate that
- a. earnings per share has been increasing while the market price of the stock has held steady.
  - b. earnings per share has been steadily decreasing.
  - c. the market price of the stock has been steadily rising.
  - d. both earnings per share and the market price of the stock are rising.

61. *CSO: 2A2e LOS: 2A2u*  
Collins Company reported net income of \$350,000 for the year. The company had 10,000 shares of \$100 par value, non-cumulative, 6% preferred stock and 100,000 shares of \$10 par value common stock outstanding. There were also 5,000 shares of common stock in treasury during the year. Collins declared and paid all preferred dividends as well as a \$1 per share dividend on common stock. Collins' earnings per share of common stock for the year was
- a. \$3.50.
  - b. \$3.33.
  - c. \$2.90.
  - d. \$2.76.
62. *CSO: 2A2e LOS: 2A2u*  
Ray Company has 530,000 common shares outstanding at year-end. At December 31, for basic earnings per share purposes, Ray computed its weighted average number of shares as 500,000. Prior to issuing its annual financial statements, but after year-end, Ray split its stock 2 for 1. Ray's weighted average number of shares to be used for computing annual basic earnings per share is
- a. 500,000.
  - b. 530,000.
  - c. 1,000,000.
  - d. 1,060,000.
63. *CSO: 2A2e LOS: 2A2u*  
On January 1, Esther Pharmaceuticals had a balance of 10,000 shares of common stock outstanding. On June 1, the company issued an additional 2,000 shares of common stock for cash. A total of 5,000 shares of 6%, \$100 par, nonconvertible preferred stock was outstanding all year. Esther's net income was \$120,000 for the year. The earnings per share for the year were
- a. \$7.50.
  - b. \$8.06.
  - c. \$10.00.
  - d. \$10.75.

64. CSO: 2A2e LOS: 2A2u

Roy company had 120,000 common shares and 100,000 preferred shares outstanding at the close of the prior year. During the current year Roy repurchased 12,000 common shares on March 1, sold 30,000 common shares on June 1, and sold an additional 60,000 common shares on November 1. No change in preferred shares outstanding occurred during the year. The number of shares of stock outstanding to be used in the calculation of basic earnings per share at the end of the current year is

- a. 100,000.
- b. 137,500.
- c. 198,000.
- d. 298,000.

65. CSO: 2A2e LOS: 2A2v

Selected information regarding Dyle Corporation's outstanding equity is shown below.

Common stock, \$10 par value, 350,000 shares outstanding	\$3,500,000
Preferred stock, \$100 par value, 10,000 shares outstanding	1,000,000
Preferred stock dividend paid	60,000
Common stock dividend paid	700,000
Earnings per common share	3
Market price per common share	18

Dyle's yield on common stock is

- a. 11.11%.
- b. 16.66%.
- c. 16.88%.
- d. 20.00%.

66. CSO: 2A2e LOS: 2A2v

For the most recent fiscal period, Oakland Inc. paid a regular quarterly dividend of \$0.20 per share and had earnings of \$3.20 per share. The market price of Oakland stock at the end of the period was \$40.00 per share. Oakland's dividend yield was

- a. 0.50%.
- b. 1.00%.
- c. 2.00%.
- d. 6.25%.

67. CSO: 2A2e LOS: 2A2v

The dividend yield ratio is calculated by which one of the following methods?

- a. Market price per share divided by dividends per share.
- b. Earnings per share divided by dividends per share.
- c. Dividends per share divided by market price per share.
- d. Dividends per share divided by earnings per share.

68. CSO: 2A2e LOS: 2A2v

Mayson Company reported net income of \$350,000 for last year. The company had 100,000 shares of \$10 par value common stock outstanding and 5,000 shares of common stock in treasury during the year. Mayson declared and paid \$1 per share dividends on common stock. The market price per common share at the end of last year was \$30. The company's dividend yield for the year was

- a. 30.03%.
- b. 28.57%.
- c. 11.11%.
- d. 3.33%.

69. CSO: 2A2e LOS: 2A2v

The following information concerning Arnold Company's common stock was included in the company's financial reports for the last two years.

	<u>Year 2</u>	<u>Year 1</u>
Market price per share on December 31	\$60	\$50
Par value per share	10	10
Earnings per share	3	3
Dividends per share	1	1
Book value per share on December 31	36	34

Arnold's dividend yield in Year 2

- a. has increased compared to Year 1.
- b. is indicative of the company's failure to provide a positive return to the investors.
- c. is the same as Year 1.
- d. has declined compared to Year 1.

70. *CSO: 2A4a LOS: 2A4a.2*  
A firm's functional currency should be
- selected on the basis of several economic factors including cash flow, sales price, and financing indicators.
  - the currency of the foreign environment in which the firm primarily generates and expends cash.
  - selected on the basis of cost-benefit analysis and ease of preparing consolidated financial statements.
  - the currency of the parent organization as the firm operates as an extension of the parent's operations.
71. *CSO: 2A4a LOS: 2A4a.2*  
The functional currency of an entity is defined as the currency
- of the entity's parent company.
  - of the primary country in which the entity is physically located.
  - in which the books of record are maintained for all entity operations.
  - of the primary economic environment in which the entity operates.
72. *CSO: 2A4c LOS: 2A4c.2*  
If a company uses off-balance-sheet financing, assets have been acquired
- for cash.
  - with operating leases.
  - with financing leases.
  - with a line of credit.
73. *CSO: 2A4e LOS: 2A4e*  
The concept of economic profit is **best** defined as total
- revenue minus all accounting costs.
  - income minus the sum of total fixed and variable costs.
  - revenue minus the sum of total fixed and variable costs.
  - revenue minus all explicit and implicit costs.
74. *CSO: 2A4e LOS: 2A4e*  
"Economic costs" often differ from costs shown in a firm's financial statements. For a corporation, a major difference would arise due to
- interest costs.
  - salary and wage costs.
  - opportunity costs.
  - state and local tax costs.

75. CSO: 2A4e LOS: 2A4e

Which of the following costs, when subtracted from total revenue, yields economic profit?

- a. Variable costs.
- b. Recurring operating costs.
- c. Fixed and variable costs.
- d. Opportunity costs of all inputs.

76. CSO: 2A4e LOS: 2A4e

Williams makes \$35,000 a year as an accounting clerk. He decides to quit his job to enter an MBA program full-time. Assume Williams doesn't work in the summer or hold any part-time jobs. His tuition, books, living expenses, and fees total \$25,000 a year. Given this information, the annual total economic cost of Williams' MBA studies is

- a. \$10,000.
- b. \$35,000.
- c. \$25,000.
- d. \$60,000.

77. CSO: 2A4e LOS: 2A4e

The financial statements of Lark Inc. for last year are shown below.

Income Statement (\$000)

Revenue	\$4,000
Cost of sales	<u>2,900</u>
Gross margin	1,100
General & administrative	500
Interest	100
Taxes	<u>150</u>
Net income	<u>\$ 350</u>

Balance Sheet (\$000)

Current assets	\$ 800	Current liabilities	\$ 500
Plant & equipment	3,200	Long-term debt	\$1,000
		Common equity	<u>2,500</u>
Totals	<u>\$4,000</u>	Totals	<u>\$4,000</u>

If Lark's book values approximate market values and if the opportunity costs of debt and equity are 10% and 15%, respectively, what was the economic profit for Lark last year?

- a. (\$125,000).
- b. (\$25,000).
- c. \$0.
- d. \$350,000.

## Section B: Corporate Finance

78. CSO: 2B1b LOS: 2B1b

The systematic risk of an individual security is measured by the

- a. standard deviation of the security's rate of return.
- b. covariance between the security's returns and the general market.
- c. security's contribution to the portfolio risk.
- d. standard deviation of the security's returns and other similar securities.

79. CSO: 2B1b LOS: 2B1c

Which one of the following provides the **best** measure of interest rate risk for a corporate bond?

- a. Duration.
- b. Yield to maturity.
- c. Bond rating.
- d. Maturity.

80. CSO: 2B1a LOS: 2B1h

Frasier Products has been growing at a rate of 10% per year and expects this growth to continue and produce earnings per share of \$4.00 next year. The firm has a dividend payout ratio of 35% and a beta value of 1.25. If the risk-free rate is 7% and the return on the market is 15%, what is the expected current market value of Frasier's common stock?

- a. \$14.00.
- b. \$16.00.
- c. \$20.00.
- d. \$28.00.

81. CSO: 2B1a LOS: 2B1g

Which one of the following would have the **least** impact on a firm's beta value?

- a. Debt-to-equity ratio.
- b. Industry characteristics.
- c. Operating leverage.
- d. Payout ratio.

82. *CSO: 2B1a LOS: 2B1g*  
If Dexter Industries has a beta value of 1.0, then its
- a. return should equal the risk-free rate.
  - b. price is relatively stable.
  - c. expected return should approximate the overall market.
  - d. volatility is low.
83. *CSO: 2B4g LOS: 2B4ee*  
Buying a wheat futures contract to protect against price fluctuation of wheat would be classified as a
- a. fair value hedge.
  - b. cash flow hedge.
  - c. foreign currency hedge.
  - d. swap.
84. *CSO: 2B2b LOS: 2B2c*  
The call provision in some bond indentures allows
- a. the issuer to exercise an option to redeem the bonds.
  - b. the bondholder to exchange the bond, at no additional cost, for common shares.
  - c. the bondholder to redeem the bond early by paying a call premium.
  - d. the issuer to pay a premium in order to prevent bondholders from redeeming bonds.
85. *CSO: 2B2b LOS: 2B2c*  
Protective clauses set forth in an indenture are known as
- a. provisions.
  - b. requirements.
  - c. addenda.
  - d. covenants.
86. *CSO: 2B2b LOS: 2B2c*  
A requirement specified in an indenture agreement which states that a company cannot acquire or sell major assets without prior creditor approval is known as a
- a. protective covenant.
  - b. call provision.
  - c. warrant.
  - d. put option.



87. *CSO: 2B2b LOS: 2b2c*  
Dorsy Manufacturing plans to issue mortgage bonds subject to an indenture. Which of the following restrictions or requirements are likely to be contained in the indenture?
- I. Receiving the trustee's permission prior to selling the property.
  - II. Maintain the property in good operating condition.
  - III. Insuring plant and equipment at certain minimum levels.
  - IV. Including a negative pledge clause.
- a. I and IV only.
  - b. II and III only.
  - c. I, III, and IV only.
  - d. I, II, III and IV.
88. *CSO: 2B2c LOS: 2B2d*  
Which one of the following statements concerning debt instruments is **correct**?
- a. The coupon rate and yield of an outstanding long-term bond will change over time as economic factors change.
  - b. A 25-year bond with a coupon rate of 9% and one year to maturity has more interest rate risk than a 10-year bond with a 9% coupon issued by the same firm with one year to maturity.
  - c. For long-term bonds, price sensitivity to a given change in interest rates is greater the longer the maturity of the bond.
  - d. A bond with one year to maturity would have more interest rate risk than a bond with 15 years to maturity.
89. *CSO: 2B2b LOS: 2B2d*  
Which one of the following situations would prompt a firm to issue debt, as opposed to equity, the next time it raises external capital?
- a. High breakeven point.
  - b. Significant percentage of assets under capital lease.
  - c. Low fixed-charge coverage.
  - d. High effective tax rate.
90. *CSO: 2B2b LOS: 2B2c*  
Which one of the following is a debt instrument that generally has a maturity of ten years or more?
- a. A bond.
  - b. A note.
  - c. A chattel mortgage.
  - d. A financial lease.

91. *CSO: 2B2b LOS: 2B2b*  
James Hemming, the chief financial officer of a mid-western machine parts manufacturer, is considering splitting the company's stock, which is currently selling at \$80.00 per share. The stock currently pays a \$1.00 per share dividend. If the split is two-for-one, Mr. Hemming may expect the post-split price to be
- exactly \$40.00, regardless of dividend policy.
  - greater than \$40.00, if the dividend is changed to \$0.45 per new share.
  - greater than \$40.00, if the dividend is changed to \$0.55 per new share.
  - less than \$40.00, regardless of dividend policy.
92. *CSO: 2B2b LOS: 2B2b*  
Which one of the following **best** describes the record date as it pertains to common stock?
- Four business days prior to the payment of a dividend.
  - The 52-week high for a stock published in the Wall Street Journal.
  - The date that is chosen to determine the ownership of shares.
  - The date on which a prospectus is declared effective by the Securities and Exchange Commission.
93. *CSO: 2B2b LOS: 2B2b*  
Preferred stock may be retired through the use of any one of the following **except** a
- conversion.
  - call provision.
  - refunding.
  - sinking fund.
94. *CSO: 2B2b LOS: 2B2b*  
All of the following are characteristics of preferred stock **except** that
- it may be callable at the option of the corporation.
  - it may be converted into common stock.
  - its dividends are tax deductible to the issuer.
  - it usually has no voting rights.
95. *CSO: 2B2b LOS: 2B2b*  
Which one of the following describes a **disadvantage** to a firm that issues preferred stock?
- Preferred stock dividends are legal obligations of the corporation.
  - Preferred stock typically has no maturity date.
  - Preferred stock is usually sold on a higher yield basis than bonds.
  - Most preferred stock is owned by corporate investors.

96. *COS: 2B2c LOS: 2B2q*

Which of the following, when considered individually, would generally have the effect of increasing a firm's cost of capital?

- I. The firm reduces its operating leverage.
- II. The corporate tax rate is increased.
- III. The firm pays off its only outstanding debt.
- IV. The Treasury Bond yield increases.

- a. I and III.
- b. II and IV.
- c. III and IV.
- d. I, III and IV.

97. *CSO: 2B2c LOS: 2B2r*

An accountant for Stability Inc. must calculate the weighted average cost of capital of the corporation using the following information.

		<u>Interest Rate</u>
Accounts payable	\$35,000,000	-0-
Long-term debt	10,000,000	8%
Common stock	10,000,000	15%
Retained earnings	5,000,000	18%

What is the weighted average cost of capital of Stability?

- a. 6.88%.
- b. 8.00%.
- c. 10.25%.
- d. 12.80%.

98. CSO: 2B2c LOS: 2B2r

Kielly Machines Inc. is planning an expansion program estimated to cost \$100 million. Kielly is going to raise funds according to its target capital structure shown below.

Debt	.30
Preferred stock	.24
Equity	.46

Kielly had net income available to common shareholders of \$184 million last year of which 75% was paid out in dividends. The company has a marginal tax rate of 40%.

Additional data:

- The before-tax cost of debt is estimated to be 11%.
- The market yield of preferred stock is estimated to be 12%.
- The after-tax cost of common stock is estimated to be 16%.

What is Kielly's weighted average cost of capital?

- a. 12.22%.
- b. 13.00%.
- c. 13.54%.
- d. 14.00%.

99. CSO: 2B2c LOS: 2B2r

Following is an excerpt from Albion Corporation's balance sheet.

Long-term debt (9% interest rate)	\$30,000,000
Preferred stock (100,000 shares, 12% dividend)	10,000,000
Common stock (5,000,000 shares outstanding)	60,000,000

Albion's bonds are currently trading at \$1,083.34, reflecting a yield to maturity of 8%. The preferred stock is trading at \$125 per share. Common stock is selling at \$16 per share, and Albion's treasurer estimates that the firm's cost of equity is 17%. If Albion's effective income tax rate is 40%, what is the firm's cost of capital?

- a. 12.6%.
- b. 13.1%.
- c. 13.9%.
- d. 14.1%.

100. CSO: 2B2c LOS: 2B2r

Thomas Company's capital structure consists of 30% long-term debt, 25% preferred stock, and 45% common equity. The cost of capital for each component is shown below.

Long-term debt	8%
Preferred stock	11%
Common equity	15%

If Thomas pays taxes at the rate of 40%, what is the company's after-tax weighted average cost of capital?

- a. 7.14%.
- b. 9.84%.
- c. 10.94%.
- d. 11.90%.

101. CSO: 2B2c LOS: 2B2r

Joint Products Inc., a corporation with a 40% marginal tax rate, plans to issue \$1,000,000 of 8% preferred stock in exchange for \$1,000,000 of its 8% bonds currently outstanding. The firm's total liabilities and equity are equal to \$10,000,000. The effect of this exchange on the firm's weighted average cost of capital is likely to be

- a. no change, since it involves equal amounts of capital in the exchange and both instruments have the same rate.
- b. a decrease, since a portion of the debt payments are tax deductible.
- c. a decrease, since preferred stock payments do not need to be made each year, whereas debt payments must be made.
- d. an increase, since a portion of the debt payments are tax deductible.

102. COS: 2B2c LOS: 2B2r

Cox Company has sold 1,000 shares of \$100 par, 8% preferred stock at an issue price of \$92 per share. Stock issue costs were \$5 per share. Cox pays taxes at the rate of 40%. What is Cox's cost of preferred stock capital?

- a. 8.00%.
- b. 8.25%.
- c. 8.70%.
- d. 9.20%.

103. CSO: 2B2c LOS: 2B2r

In calculating the component costs of long-term funds, the appropriate cost of retained earnings, ignoring flotation costs, is equal to

- a. the cost of common stock.
- b. the same as the cost of preferred stock.
- c. the weighted average cost of capital for the firm.
- d. zero, or no cost.

104. CSO: 2B2c LOS: 2B2r

The Hatch Sausage Company is projecting an annual growth rate for the foreseeable future of 9%. The most recent dividend paid was \$3.00 per share. New common stock can be issued at \$36 per share. Using the constant growth model, what is the approximate cost of capital for retained earnings?

- a. 9.08%.
- b. 17.33%.
- c. 18.08%
- d. 19.88%.

105. CSO: 2B2c LOS: 2B2r

The management of Old Fenske Company (OFC) has been reviewing the company's financing arrangements. The current financing mix is \$750,000 of common stock, \$200,000 of preferred stock (\$50 par) and \$300,000 of debt. OFC currently pays a common stock cash dividend of \$2. The common stock sells for \$38, and dividends have been growing at about 10% per year. Debt currently provides a yield to maturity to the investor of 12%, and preferred stock pays a dividend of 9% to yield 11%. Any new issue of securities will have a flotation cost of approximately 3%. OFC has retained earnings available for the equity requirement. The company's effective income tax rate is 40%. Based on this information, the cost of capital for retained earnings is

- a. 9.5%.
- b. 14.2%.
- c. 15.8%.
- d. 16.0%.

106. CSO: 2B2c LOS: 2B2r

Angela Company's capital structure consists entirely of long-term debt and common equity. The cost of capital for each component is shown below.

Long-term debt	8%
Common equity	15%

Angela pays taxes at a rate of 40%. If Angela's weighted average cost of capital is 10.41%, what proportion of the company's capital structure is in the form of long-term debt?

- a. 34%.
- b. 45%.
- c. 55%.
- d. 66%.

107. CSO: 2B4b LOS: 2B4e

A firm uses the following model to determine the optimal average cash balance (Q).

$$Q = \sqrt{\frac{2 \times \text{annual cash disbursement} \times \text{cost per sale of T-Bill}}{\text{interest rate}}}$$

An **increase** in which one of the following would result in a **decrease** in the optimal cash balance?

- a. Uncertainty of cash outflows.
- b. Cost of a security trade.
- c. Return on marketable securities.
- d. Cash requirements for the year.

108. CSO: 2B4b LOS: 2B4e

All of the following are reasons for holding cash **except** for the

- a. precautionary motive.
- b. transactions motive.
- c. motive to make a profit.
- d. motive to meet future needs.

109. CSO: 2B4b LOS: 2B4g

All of the following can be utilized by a firm in managing its cash outflows **except**

- a. zero-balance accounts.
- b. centralization of payables.
- c. controlled disbursement accounts.
- d. lock-box system.

110. CSO: 2B4b LOS: 2B4h

Powell Industries deals with customers throughout the country and is attempting to more efficiently collect its accounts receivable. A major bank has offered to develop and operate a lock-box system for Powell at a cost of \$90,000 per year. Powell averages 300 receipts per day at an average of \$2,500 each. Its short-term interest cost is 8% per year. Using a 360-day year, what reduction in average collection time would be needed in order to justify the lock-box system?

- a. 0.67 days.
- b. 1.20 days.
- c. 1.25 days.
- d. 1.50 days.

111. CSO: 2B4b LOS: 2B4h

Mandel Inc. has a zero-balance account with a commercial bank. The bank sweeps any excess cash into a commercial investment account earning interest at the rate of 4% per year, payable monthly. When Mandel has a cash deficit, a line of credit is used which has an interest rate of 8% per year, payable monthly based on the amount used. Mandel expects to have a \$2 million cash balance on January 1 of next year. Net cash flows for the first half of the year, excluding the effects of interest received or paid, are forecasted (in millions of dollars) as follows.

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>
Net cash inflows (\$)	+2	+1	-5	-3	-2	+6

Assuming all cash-flows occur at the end of each month, approximately how much interest will Mandel incur for this period?

- a. \$17,000 net interest paid.
- b. \$53,000 net interest paid.
- c. \$76,000 net interest paid.
- d. \$195,000 net interest paid.

112. CSO: 2B4b LOS: 2B4h

Dexter Products receives \$25,000 worth of merchandise from its major supplier on the 15th and 30th of each month. The goods are sold on terms of 1/15, net 45, and Dexter has been paying on the net due date and foregoing the discount. A local bank offered Dexter a loan at an interest rate of 10%. What will be the net annual savings to Dexter if it borrows from the bank and utilizes the funds to take advantage of the trade discount?

- a. \$525.
- b. \$1,050.
- c. \$1,575.
- d. \$2,250.



113. *CSO: 2B4b LOS: 2B4g*

The Rolling Stone Corporation, an entertainment ticketing service, is considering the following means of speeding cash flow for the corporation.

- Lock Box System. This would cost \$25 per month for each of its 170 banks and would result in interest savings of \$5,240 per month.
- Drafts. Drafts would be used to pay for ticket refunds based on 4,000 refunds per month at a cost of \$2.00 per draft, which would result in interest savings of \$6,500 per month.
- Bank Float. Bank float would be used for the \$1,000,000 in checks written each month. The bank would charge a 2% fee for this service, but the corporation will earn \$22,000 in interest on the float.
- Electronic Transfer. Items over \$25,000 would be electronically transferred; it is estimated that 700 items of this type would be made each month at a cost of \$18 each, which would result in increased interest earnings of \$14,000 per month.

Which of these methods of speeding cash flow should Rolling Stone Corporation adopt?

- a. Lock box and electronic transfer only.
- b. Bank float and electronic transfer only.
- c. Lock box, drafts, and electronic transfer only.
- d. Lock box, bank float, and electronic transfer only.

114. *CSO: 2B4b LOS: 2B4g*

JKL Industries requires its branch offices to transfer cash balances once per week to the central corporate account. A wire transfer costs \$12 and assures the cash is available the same day. A depository transfer check (DTC) costs \$1.50 and generally results in funds being available in 2 days. JKL's cost of short-term funds averages 9%, and they use a 360-day year in all calculations. What is the minimum transfer amount that would justify the cost of a wire transfer as opposed to a DTC?

- a. \$21,000.
- b. \$24,000.
- c. \$27,000.
- d. \$42,000.

115. *CSO: 2B4b LOS: 2B4l*

The establishment and maintenance of a zero-balance account (ZBA) typically reduces all of the following **except**

- a. the cost of cash management.
- b. the disbursement float.
- c. excess bank balances.
- d. management time.

116. *CSO: 2B4c LOS: 2B4o*  
Which one of the following instruments would be **least** appropriate for a corporate treasurer to utilize for temporary investment of cash?
- a. U.S. Treasury bills.
  - b. Money market mutual funds.
  - c. Commercial paper.
  - d. Municipal bonds.
117. *CSO: 2B4c LOS: 2B4n*  
Which one of the following statements **best** characterizes U.S. Treasury bills?
- a. They have no coupon rate, no interest rate risk, and are issued at par.
  - b. They have an active secondary market, one to twenty-four month maturities, and monthly interest payments.
  - c. They have an active secondary market, the interest received is exempt from federal income tax, and there is no interest rate risk.
  - d. They have no coupon rate, no default risk, and interest received is subject to federal income tax.
118. *CSO: 2B4c LOS: 2B42B4dn*  
The Duoplan Company is determining the most appropriate source of short-term funding. Trade credit terms from suppliers are 2/30, net 90. The rate for borrowing at the bank is 12%. The company has also been approached by an investment banker offering to issue Duoplan's commercial paper. The commercial paper would be issued quarterly in increments of \$9.1 million with net proceeds of \$8.8 million. Which option should the firm select?
- a. The trade discount, because it provides the lowest cost of funds.
  - b. Bank borrowing, because it provides the lowest cost of funds.
  - c. Commercial paper, because it provides the lowest cost of funds.
  - d. The costs are so similar that the decision is a matter of convenience.
119. *CSO: 2B4d LOS: 2B4q*  
Clauson Inc. grants credit terms of 1/15, net 30 and projects gross sales for the year of \$2,000,000. The credit manager estimates that 40% of customers pay on the 15th day, 40% of the 30th day and 20% on the 45th day. Assuming uniform sales and a 360-day year, what is the projected amount of overdue receivables?
- a. \$50,000.
  - b. \$83,333.
  - c. \$116,676.
  - d. \$400,000.

120. *CSO: 2B4d LOS: 2B4t*

Northville Products is changing its credit terms from net 30 to 2/10, net 30. The **least** likely effect of this change would be a(n)

- a. increase in sales.
- b. shortening of the cash conversion cycle.
- c. increase in short-term borrowings.
- d. lower number of days sales outstanding.

121. *CSO: 2B4d LOS: 2B4t*

Snug-fit, a maker of bowling gloves, is investigating the possibility of liberalizing its credit policy. Currently, payment is made on a cash-on-delivery basis. Under a new program, sales would increase by \$80,000. The company has a gross profit margin of 40%. The estimated bad debt loss rate on the incremental sales would be 6%. Ignoring the cost of money, what would be the return on sales before taxes for the new sales?

- a. 34.0%.
- b. 36.2%.
- c. 40.0%.
- d. 42.5%.

122. *CSO: 2B4d LOS: 2B4r*

A credit manager considering whether to grant trade credit to a new customer is **most** likely to place primary emphasis on

- a. profitability ratios.
- b. valuation ratios.
- c. growth ratios.
- d. liquidity ratios.

123. *CSO: 2B4d LOS: 2B4gg*

Foster Products is reviewing its trade credit policy with respect to the small retailers to which it sells. Four plans have been studied and the results are as follows.

<u>Plan</u>	<u>Annual Revenue</u>	<u>Bad Debt</u>	<u>Collection Costs</u>	<u>Accounts Receivable</u>	<u>Inventory</u>
A	\$200,000	\$ 1,000	\$1,000	\$20,000	\$40,000
B	250,000	3,000	2,000	40,000	50,000
C	300,000	6,000	5,000	60,000	60,000
D	350,000	12,000	8,000	80,000	70,000

The information shows how various annual expenses such as bad debts and the cost of collections change as sales change. The average balance of accounts receivable and inventory have also been projected. The cost of the product to Foster is 80% of the selling price, after-tax cost of capital is 15%, and Foster's effective income tax rate is 30%. What is the optimal plan for Foster to implement?

- a. Plan A.
- b. Plan B.
- c. Plan C.
- d. Plan D.

124. *CSO: 2B4d LOS: 2B4t*

Consider the following factors affecting a company as it is reviewing its trade credit policy.

- I. Operating at full capacity.
- II. Low cost of borrowing.
- III. Opportunity for repeat sales.
- IV. Low gross margin per unit.

Which of the above factors would indicate that the company should liberalize its credit policy?

- a. I and II only.
- b. I, II and III only.
- c. II and III only.
- d. III and IV only.

125. CSO: 2B4d LOS: 2B4t

Computer Services is an established firm that sells computer hardware, software and services. The firm is considering a change in its credit policy. It has been determined that such a change would not change the payment patterns of the current customers. To determine whether such a change would be beneficial, the firm has identified the proposed new credit terms, the expected additional sales, the expected contribution margin on the sales, the expected bad debt losses, and the investment in additional receivables and the period of the investment. What additional information, if any, does the firm require to determine the profitability of the proposed new policy as compared to the current credit policy?

- The credit standards that presently exist.
- The new credit standards.
- The opportunity cost of funds.
- No additional information is needed.

126. CSO: 2B4d LOS: 2B4gg

Harson Products currently has a conservative credit policy and is in the process of reviewing three other credit policies. The current credit policy (Policy A) results in sales of \$12 million per year. Policies B and C involve higher sales, accounts receivable and inventory balances, as well as higher bad debt and collection costs. Policy D grants longer payment terms than Policy C, but charges customers interest if they take advantage of the lengthy payment terms. The policies are outlined below.

	P o l i c y (000)			
	A	B	C	D
Sales	\$12,000	\$13,000	\$14,000	\$14,000
Average accounts receivable	1,500	2,000	3,500	5,000
Average inventory	2,000	2,300	2,500	2,500
Interest income	0	0	0	500
Bad debt expense	100	125	300	400
Collection cost	100	125	250	350

If the direct cost of products is 80% of sales and the cost of short-term funds is 10%, what is the optimal policy for Harson?

- Policy A.
- Policy B.
- Policy C.
- Policy D.

127. CSO: 2B4d LOS: 2B4t

Global Manufacturing Company has a cost of borrowing of 12%. One of the firm's suppliers has just offered new terms for purchases. The old terms were cash on delivery and the new terms are 2/10, net 45. Should Global pay within the first ten days?

- a. Yes, the cost of not taking the trade discount exceeds the cost of borrowing.
- b. No, the cost of trade credit exceeds the cost of borrowing.
- c. No, the use of debt should be avoided if possible.
- d. The answer depends on whether the firm borrows money.

128. CSO: 2B4d LOS: 2B2m2B4e

Locar Corporation had net sales last year of \$18,600,000 (of which 20% were installment sales). It also had an average accounts receivable balance of \$1,380,000. Credit terms are 2/10, net 30. Based on a 360-day year, Locar's average collection period last year was

- a. 26.2 days.
- b. 26.7 days.
- c. 27.3 days.
- d. 33.4 days.

129. CSO: 2B4e LOS: 2B4gg

Atlantic Distributors is expanding and wants to increase its level of inventory to support an aggressive sales target. They would like to finance this expansion using debt. Atlantic currently has loan covenants that require the working capital ratio to be at least 1.2. The average cost of the current liabilities is 12% and the cost of the long-term debt is 8%. Below is the current balance sheet for Atlantic.

Current assets	\$200,000	Current liabilities	\$165,000
Fixed assets	<u>100,000</u>	Long-term debt	100,000
Total assets	<u>\$300,000</u>	Equity	<u>35,000</u>
		Total debt & equity	<u>\$300,000</u>

Which one of the following alternatives will provide the resources to expand the inventory while lowering the total cost of debt and satisfying the loan covenant?

- a. Increase both accounts payable and inventory by \$25,000.
- b. Sell fixed assets with a book value of \$20,000 for \$25,000 and use the proceeds to increase inventory.
- c. Borrow short-term funds of \$25,000, and purchase inventory of \$25,000.
- d. Collect \$25,000 accounts receivable; use \$10,000 to purchase inventory and use the balance to reduce short-term debt.

130. CSO: 2B4e LOS: 2B4v  
All of the following are carrying costs of inventory **except**

- a. storage costs.
- b. insurance.
- c. shipping costs.
- d. opportunity costs.

131. CSO: 2B4e LOS: 2B4v  
Valley Inc. uses 400 lbs. of a rare isotope per year. The isotope costs \$500 per lb., but the supplier is offering a quantity discount of 2% for order sizes between 30 and 79 lbs., and a 6% discount for order sizes of 80 lbs. or more. The ordering costs are \$200. Carrying costs are \$100 per lb. of material and are not affected by the discounts. If the purchasing manager places eight orders of 50 lbs. each, the total cost of ordering and carrying inventory, including discounts lost, will be

- a. \$1,600.
- b. \$4,100.
- c. \$6,600.
- d. \$12,100.

132. CSO: 2B4e LOS: 2B4v  
A review of the inventories of Cedar Grove Company shows the following cost data for entertainment centers.

Invoice price	\$400.00 per unit
Freight and insurance on shipment	20.00 per unit
Insurance on inventory	15.00 per unit
Unloading	140.00 per order
Cost of placing orders	10.00 per order
Cost of capital	25%

What are the total carrying costs of inventory for an entertainment center?

- a. \$105.
- b. \$115.
- c. \$120.
- d. \$420.

133. *CSO: 2B4e LOS: 2B4v*  
Paint Corporation expects to use 48,000 gallons of paint per year costing \$12 per gallon. Inventory carrying cost is equal to 20% of the purchase price. The company uses its inventory at a constant rate. The lead time for placing the order is 3 days, and Paint Corporation holds 2,400 gallons of paint as safety stock. If the company orders 2,000 gallons of paint per order, what is the cost of carrying inventory?
- a. \$2,400.
  - b. \$5,280.
  - c. \$5,760.
  - d. \$8,160.
134. *CSO: 2B4e LOS: 2B4w*  
James Smith is the new manager of inventory at American Electronics, a major retailer. He is developing an inventory control system, and knows he should consider establishing a safety stock level. The safety stock can protect against all of the following risks, **except** for the possibility that
- a. customers cannot find the merchandise they want, and they will go to the competition.
  - b. shipments of merchandise from the manufacturers is delayed by as much as one week.
  - c. the distribution of daily sales will have a large variance, due to holidays, weather, advertising, and weekly shopping habits.
  - d. new competition may open in the company's market area.
135. *CSO: 2B4e LOS: 2B4y*  
Carnes Industries uses the Economic Order Quantity (EOQ) model as part of its inventory control program. An **increase** in which one of the following variables would **increase** the EOQ?
- a. Carrying cost rate.
  - b. Purchase price per unit.
  - c. Ordering costs.
  - d. Safety stock level.
136. *CSO: 2B4e LOS: 2B4y*  
Which one of the following is **not** explicitly considered in the standard calculation of Economic Order Quantity (EOQ)?
- a. Level of sales.
  - b. Fixed ordering costs.
  - c. Carrying costs.
  - d. Quantity discounts.



137. *CSO: 2B4e LOS: 2B4y*  
Which one of the following statements concerning the economic order quantity (EOQ) is **correct**?
- a. The EOQ results in the minimum ordering cost and minimum carrying cost.
  - b. Increasing the EOQ is the best way to avoid stockouts.
  - c. The EOQ model assumes constantly increasing usage over the year.
  - d. The EOQ model assumes that order delivery times are consistent.
138. *CSO: 2B4e LOS: 2B4y*  
Moss Products uses the Economic Order Quantity (EOQ) model as part of its inventory management process. A **decrease** in which one of the following variables would **increase** the EOQ?
- a. Annual sales.
  - b. Cost per order.
  - c. Safety stock level.
  - d. Carrying costs.
139. *CSO: 2B4f LOS: 2B4ff*  
Burke Industries has a revolving credit arrangement with its bank which specifies that Burke can borrow up to \$5 million at an annual interest rate of 9% payable monthly. In addition, Burke must pay a commitment fee of 0.25% per month on the unused portion of the line, payable monthly. Burke expects to have a \$2 million cash balance and no borrowings against this line of credit on April 1, net cash inflows of \$2 million in April, net outflows of \$7 million in May, and net inflows of \$4 million in June. If all cash-flows occur at the end of the month, approximately how much will Burke pay to the bank during the second quarter related to this revolving credit arrangement?
- a. \$47,700.
  - b. \$52,500.
  - c. \$60,200.
  - d. \$62,500.
140. *CSO: 2B4f LOS: 2B4z*  
Of the following, the working capital financing policy that would subject a firm to the **greatest** level of risk is the one where the firm finances
- a. fluctuating current assets with short-term debt.
  - b. permanent current assets with long-term debt.
  - c. fluctuating current assets with long-term debt.
  - d. permanent current assets with short-term debt.

141. CSO: 2B4f LOS: 2B4bb

The Texas Corporation is considering the following opportunities to purchase an investment at the following amounts and discounts.

<u>Term</u>	<u>Amount</u>	<u>Discount</u>
90 days	\$ 80,000	5%
180 days	75,000	6%
270 days	100,000	5%
360 days	60,000	10%

Which opportunity offers the Texas Corporation the highest annual yield?

- a. 90-day investment.
- b. 180-day investment.
- c. 270-day investment.
- d. 360-day investment.

142. CSO: 2B4f LOS: 2B4aa

A manufacturer with seasonal sales would be **most likely** to obtain which one of the following types of loans from a commercial bank to finance the need for a fixed amount of additional capital during the busy season?

- a. Transaction loan.
- b. Insurance company term loan.
- c. Installment loan.
- d. Unsecured short-term loan.

143. CSO: 2B4f LOS: 2B4aa

Which of the following financing vehicles would a commercial bank be likely to offer to its customers?

- I. Discounted notes
- II. Term loans
- III. Lines of credit
- IV. Self-liquidating loans

- a. I and II.
- b. III and IV.
- c. I, III and IV.
- d. I, II, III and IV.

144. *CSO: 2B4f LOS: 2B4gg*

Megatech Inc. is a large publicly-held firm. The treasurer is making an analysis of the short-term financing options available for the third quarter, as the company will need an average of \$8 million for the month of July, \$12 million for August, and \$10 million for September. The following options are available.

- I. Issue commercial paper on July 1 in an amount sufficient to net Megatech \$12 million at an effective rate of 7% per year. Any temporarily excess funds will be deposited in Megatech's investment account at First City Bank and earn interest at an annual rate of 4%.
- II. Utilize a line of credit from First City Bank with interest accruing monthly on the amount utilized at the prime rate, which is estimated to be 8% in July and August and 8.5% in September.

Based on this information, which one of the following actions should the treasurer take?

- a. Issue commercial paper, since it is approximately \$35,000 less expensive than the line of credit.
- b. Issue commercial paper, since it is approximately \$14,200 less expensive than the line of credit.
- c. Use the line of credit, since it is approximately \$15,000 less expensive than issuing commercial paper.
- d. Use the line of credit, since it is approximately \$5,800 less expensive than issuing commercial paper.

145. *CSO: 2B4f LOS: 2B4aa*

Dudley Products is given terms of 2/10, net 45 by its suppliers. If Dudley forgoes the cash discount and instead pays the suppliers 5 days after the net due date, what is the annual interest rate cost (using a 360-day year)?

- a. 18.0%.
- b. 18.4%.
- c. 21.0%.
- d. 24.5%.

146. *CSO: 2B4f LOS: 2B4bb*

A firm is given payment terms of 3/10, net 90 and forgoes the discount paying on the net due date. Using a 360-day year and ignoring the effects of compounding, what is the effective annual interest rate cost?

- a. 12.0%.
- b. 12.4%.
- c. 13.5%.
- d. 13.9%.

147. *CSO: 2B4f LOS: 2B4cc*  
Lang National Bank offered a one-year loan to a commercial customer. The instrument is a discounted note with a nominal rate of 12%. What is the effective interest rate to the borrower?
- a. 10.71%.
  - b. 12.00%.
  - c. 13.20%.
  - d. 13.64%.
148. *CSO: 2B4f LOS: 2B4cc*  
Gates Inc. has been offered a one-year loan by its commercial bank. The instrument is a discounted note with a stated interest rate of 9%. If Gates needs \$300,000 for use in the business, what should the face value of the note be?
- a. \$275,229.
  - b. \$327,000.
  - c. \$327,154.
  - d. \$329,670.
149. *CSO: 2B4f LOS: 2B4cc*  
Keller Products needs \$150,000 of additional funds over the next year in order to satisfy a significant increase in demand. A commercial bank has offered Keller a one-year loan at a nominal rate of 8%, which requires a 15% compensating balance. How much would Keller have to borrow, assuming it would need to cover the compensating balance with the loan proceeds?
- a. \$130,435.
  - b. \$172,500.
  - c. \$176,471.
  - d. \$194,805.
150. *CSO: 2B4f LOS: 2B4cc*  
Approximately what amount of compensating balance would be required for a stated interest rate of 10% to equal an effective interest rate of 10.31% on a \$100,000,000 one-year loan?
- a. \$310,000.
  - b. \$3,000,000.
  - c. \$3,100,000.
  - d. Not enough information is given.

151. CSO: 2B4f LOS: 2B4cc

The effective annual interest rate to the borrower of a \$100,000 one-year loan with a stated rate of 7% and a 20% compensating balance is

- a. 7.0%.
- b. 8.4%.
- c. 8.75%.
- d. 13.0%.

152. CSO: 2B4f LOS: 2B4cc

Todd Manufacturing Company needs a \$100 million loan for one year. Todd's banker has presented two alternatives as follows:

Option #1 - Loan with a stated interest rate of 10.25%. No compensating balance required.

Option #2 - Loan with a stated interest rate of 10.00%. Non-interest bearing compensating balance required.

Which of the following compensating balances, withheld from the loan proceeds, would result in Option #2 having an effective interest rate equal to the 10.25% rate of Option #1?

- a. \$250,000.
- b. \$2,440,000.
- c. \$2,500,000.
- d. \$10,250,000.

153. CSO: 2B4f LOS: 2B4cc

Frame Industries has arranged a revolving line of credit for the upcoming year with a commercial bank. The arrangement is for \$20 million, with interest payable monthly on the amount utilized at the bank's prime rate and an annual commitment fee of one-half of 1 percent, computed and payable monthly on the unused portion of the line. Frame estimates that the prime rate for the upcoming year will be 8%, and expects the following average amount to be borrowed by quarter.

<u>Quarter</u>	<u>Amount Borrowed</u>
First	\$10,000,000
Second	20,000,000
Third	20,000,000
Fourth	5,000,000

How much will Frame pay to the bank next year in interest and fees?

- a. \$1,118,750.
- b. \$1,131,250.
- c. \$1,168,750.
- d. \$1,200,000.

154. CSO: 2B4f LOS: 2B4cc

What is the effective annual interest rate for a one-year \$100 million loan with a stated interest rate of 8.00%, if the lending bank requires a non-interest bearing compensating balance in the amount of \$5 million?

- a. 7.62%
- b. 8.00%
- c. 8.42%
- d. 13.00%

155. CSO: 2B3e LOS: 2B3i

The residual theory of dividends argues that dividends

- a. are necessary to maintain the market price of the common stock.
- b. are irrelevant.
- c. can be foregone unless there is an excess demand for cash dividends.
- d. can be paid if there is income remaining after funding all attractive investment opportunities.

156. CSO: 2B3e LOS:2B3j

Mason Inc. is considering four alternative opportunities. Required investment outlays and expected rates of return for these investments are given below.

<u>Project</u>	<u>Investment Cost</u>	<u>IRR</u>
A	\$200,000	12.5
B	\$350,000	14.2
C	\$570,000	16.5
D	\$390,000	10.6

The investments will be financed through 40% debt and 60% common equity. Internally generated funds totaling \$1,000,000 are available for reinvestment. If the cost of capital is 11%, and Mason strictly follows the residual dividend policy, how much in dividends would the company likely pay?

- a. \$120,000.
- b. \$328,000.
- c. \$430,000.
- d. \$650,000.

157. CSO: 2B3e LOS: 2B3j

When determining the amount of dividends to be declared, the **most** important factor to consider is the

- a. expectations of the shareholders.
- b. future planned uses of retained earnings.
- c. impact of inflation on replacement costs.
- d. future planned uses of cash.

158. CSO: 2B3e LOS: 2B3i

Underhall Inc.'s common stock is currently selling for \$108 per share. Underhall is planning a new stock issue in the near future and would like to stimulate interest in the company. The Board, however, does not want to distribute capital at this time. Therefore, Underhall is considering whether to offer a 2-for-1 common stock split or a 100% stock dividend on its common stock. The **best** reason for opting for the stock split is that

- a. it will not decrease shareholders' equity.
- b. it will not impair the company's ability to pay dividends in the future.
- c. the impact on earnings per share will not be as great.
- d. the par value per share will remain unchanged.

159. *CSO: 2B3e LOS: 2B3j*  
Kalamazoo Inc. has issued 25,000 shares of its authorized 50,000 shares of common stock. There are 5,000 shares of common stock that have been repurchased and are classified as treasury stock. Kalamazoo has 10,000 shares of preferred stock. If a \$0.60 per share dividend has been authorized on its common stock, what will be the total common stock dividend payment?
- a. \$12,000.
  - b. \$15,000.
  - c. \$21,000.
  - d. \$30,000.
160. *CSO: 2B6a LOS: 2B6b*  
Under a floating exchange rate system, which one of the following should result in a depreciation of the Swiss franc?
- a. U.S. inflation declines relative to the Swiss inflation.
  - b. U.S. income levels improve relative to the Swiss.
  - c. Swiss interest rate rise relative to the U.S. rates.
  - d. Decrease in outflows of Swiss capital to the U.S.
161. *CSO: 2B6a LOS: 2B6b*  
If the U.S. dollar appreciated against the British pound, other things being equal, we would expect that
- a. the British demand for U.S. products would increase.
  - b. U.S. demand for British products would decrease.
  - c. U.S. demand for British products would increase.
  - d. trade between the U.S. and Britain would decrease.
162. *CSO: 2B6a LOS: 2B6b*  
Country A's currency would tend to appreciate relative to Country B's currency when
- a. Country A has a higher rate of inflation than Country B.
  - b. Country B has real interest rates that are greater than real interest rates in Country A.
  - c. Country A has a slower rate of growth in income that causes its imports to lag behind its exports.
  - d. Country B switches to a more restrictive monetary policy.
163. *CSO: 2B6a LOS: 2B6b*  
Country R's currency would tend to depreciate relative to Country T's currency when
- a. Country R switches to a more restrictive monetary policy.
  - b. Country T has a rapid rate of growth in income that causes imports to lag behind exports.
  - c. Country R has a rate of inflation that is lower than the rate of inflation in Country T.
  - d. Country R has real interest rates that are lower than real interest rates in Country T.



## Section C: Decision Analysis

164. CSO: 2C1a LOS: 2C1f

Garner Products is considering a new accounts payable and cash disbursement process which is projected to add 3 days to the disbursement schedule without having significant negative effects on supplier relations. Daily cash outflows average \$1,500,000. Garner is in a short-term borrowing position for 8 months of the year and in an investment position for 4 months. On an annual basis, bank lending rates are expected to average 7% and marketable securities yields are expected to average 4%. What is the maximum annual expense that Garner could incur for this new process and still break even?

- a. \$90,000.
- b. \$180,000.
- c. \$270,000.
- d. \$315,000.

165. CSO: 2C1a LOS: 2C1f

Bolger and Co. manufactures large gaskets for the turbine industry. Bolger's per unit sales price and variable costs for the current year are as follows.

Sales price per unit	\$300
Variable costs per unit	210

Bolger's total fixed costs aggregate \$360,000. As Bolger's labor agreement is expiring at the end of the year, management is concerned about the effect a new agreement will have on its unit breakeven point. The controller performed a sensitivity analysis to ascertain the estimated effect of a \$10 per unit direct labor increase and a \$10,000 reduction in fixed costs. Based on these data, it was determined that the breakeven point would

- a. decrease by 1,000 units.
- b. decrease by 125 units.
- c. increase by 375 units.
- d. increase by 500 units.

166. CSO: 2C1a LOS: 2C1b

Phillips & Company produces educational software. Its unit cost structure, based upon an anticipated production volume of 150,000 units, is as follows.

Sales price	\$160
Variable costs	60
Fixed costs	55

The marketing department has estimated sales for the coming year at 175,000 units, which is within the relevant range of Phillip's cost structure. Phillip's break-even volume (in units) and anticipated operating income for the coming year would amount to

- 82,500 units and \$7,875,000 of operating income.
- 82,500 units and \$9,250,000 of operating income.
- 96,250 units and \$3,543,750 of operating income.
- 96,250 units and \$7,875,000 of operating income.

167. CSO: 2C1a LOS: 2C1a

All of the following are assumptions of cost-volume-profit analysis **except**

- total fixed costs do not change with a change in volume.
- revenues change proportionately with volume.
- variable costs per unit change proportionately with volume.
- sales mix for multi-product situations do not vary with volume changes.

168. CSO: 2C1a LOS: 2C1f

Ace Manufacturing plans to produce two products, Product C and Product F, during the next year, with the following characteristics.

	<u>Product C</u>	<u>Product F</u>
Selling price per unit	\$10	\$15
Variable cost per unit	\$ 8	\$10
Expected sales (units)	20,000	5,000

Total projected fixed costs for the company are \$30,000. Assume that the product mix would be the same at the breakeven point as at the expected level of sales of both products. What is the projected number of units (rounded) of Product C to be sold at the breakeven point?

- 2,308 units.
- 9,231 units.
- 11,538 units.
- 15,000 units.

169. CSO: 2C1a LOS: 2C1f

Starlight Theater stages a number of summer musicals at its theater in northern Ohio. Preliminary planning has just begun for the upcoming season, and Starlight has developed the following estimated data.

<u>Production</u>	<u>Number of Performances</u>	<u>Average Attendance per Performance</u>	<u>Ticket Price</u>	<u>Variable Costs</u> <sup>1</sup>	<u>Fixed Costs</u> <sup>2</sup>
Mr. Wonderful	12	3,500	\$18	\$3	\$165,000
That's Life	20	3,000	15	1	249,000
All That Jazz	12	4,000	20	0	316,000

<sup>1</sup> Represent payments to production companies and are based on tickets sold.

<sup>2</sup> Costs directly associated with the entire run of each production for costumes, sets, and artist fees.

Starlight will also incur \$565,000 of common fixed operating charges (administrative overhead, facility costs, and advertising) for the entire season, and is subject to a 30% income tax rate. These common charges are allocated based on total attendance for each production.

If Starlight's schedule of musicals is held, as planned, how many patrons would have to attend for Starlight to break even during the summer season?

- a. 77,918.
- b. 79,302.
- c. 79,938.
- d. 81,344.

170. CSO: 2C1a LOS: 2C1f

Carson Inc. manufactures only one product and is preparing its budget for next year based on the following information.

Selling price per unit	\$ 100
Variable costs per unit	75
Fixed costs	250,000
Effective tax rate	35%

If Carson wants to achieve a net income of \$1.3 million next year, its sales must be

- a. 62,000 units.
- b. 70,200 units.
- c. 80,000 units.
- d. 90,000 units.

171. CSO: 2C1a LOS: 2C1f

MetalCraft produces three inexpensive socket wrench sets that are popular with do-it-yourselfers. Budgeted information for the upcoming year is as follows.

<u>Model</u>	<u>Selling Price</u>	<u>Variable Cost</u>	<u>Estimated Sales Volume</u>
No. 109	\$10.00	\$ 5.50	30,000 sets
No. 145	15.00	8.00	75,000 sets
No. 153	20.00	14.00	45,000 sets

Total fixed costs for the socket wrench product line is \$961,000. If the company's actual experience remains consistent with the estimated sales volume percentage distribution, and the firm desires to generate total operating income of \$161,200, how many Model No. 153 socket sets will MetalCraft have to sell?

- a. 26,000.
- b. 54,300.
- c. 155,000.
- d. 181,000.

172. CSO: 2C1a LOS: 2C1f

Starlight Theater stages a number of summer musicals at its theater in northern Ohio. Preliminary planning has just begun for the upcoming season, and Starlight has developed the following estimated data.

<u>Production</u>	<u>Number of Performances</u>	<u>Average Attendance per Performance</u>	<u>Ticket Price</u>	<u>Variable Costs<sup>1</sup></u>	<u>Fixed Costs<sup>2</sup></u>
Mr. Wonderful	12	3,500	\$18	\$3	\$165,000
That's Life	20	3,000	15	1	249,000
All That Jazz	12	4,000	20	0	316,000

<sup>1</sup> Represent payments to production companies and are based on tickets sold.

<sup>2</sup> Costs directly associated with the entire run of each production for costumes, sets, and artist fees.

Starlight will also incur \$565,000 of common fixed operating charges (administrative overhead, facility costs, and advertising) for the entire season, and is subject to a 30% income tax rate.

If management desires Mr. Wonderful to produce an after-tax contribution of \$210,000 toward the firm's overall operating income for the year, total attendance for the production would have to be

- a. 20,800.
- b. 25,000.
- c. 25,833.
- d. 31,000.

173. CSO: 2C1a LOS: 2C1f

Robin Company wants to earn a 6% return on sales after taxes. The company's effective income tax rate is 40%, and its contribution margin is 30%. If Robin has fixed costs of \$240,000, the amount of sales required to earn the desired return is

- a. \$375,000.
- b. \$400,000.
- c. \$1,000,000.
- d. \$1,200,000.

174. CSO: 2C1a LOS: 2C1f

Bargain Press is considering publishing a new textbook. The publisher has developed the following cost data related to a production run of 6,000, the minimum possible production run. Bargain Press will sell the textbook for \$45 per copy.

	Estimated cost
Development (reviews, class testing, editing)	\$35,000
Typesetting	18,500
Depreciation on Equipment	9,320
General and Administrative	7,500
Miscellaneous Fixed Costs	4,400
Printing and Binding	30,000
Sales staff commissions (2% of selling price)	5,400
Bookstore commissions (25% of selling price)	67,500
Author's Royalties (10% of selling price)	<u>27,000</u>
Total costs at production of 6,000 copies	<u>\$204,620</u>

How many textbooks must Bargain Press sell in order to generate operating earnings (earnings before interest and taxes) of 20% on sales? (Round your answer up to the nearest whole textbook.)

- a. 2,076 copies.
- b. 5,207 copies.
- c. 5,412 copies.
- d. 6,199 copies.

175. CSO: 2C1a LOS: 2C1f

Zipper Company invested \$300,000 in a new machine to produce cones for the textile industry. Zipper's variable costs are 30% of the selling price, and its fixed costs are \$600,000. Zipper has an effective income tax rate of 40%. The amount of sales required to earn an 8% after-tax return on its investment would be

- a. \$891,429.
- b. \$914,286.
- c. \$2,080,000.
- d. \$2,133,333.

176. CSO: 2C1a LOS: 2C1a

Breakeven quantity is defined as the volume of output at which revenues are equal to

- a. marginal costs.
- b. total costs.
- c. variable costs.
- d. fixed costs.

177. CSO: 2C1a LOS: 2C1b

Eagle Brand Inc. produces two products. Data regarding these products are presented below.

	<u>Product X</u>	<u>Product Y</u>
Selling price per unit	\$100	\$130
Variable costs per unit	\$80	\$100
Raw materials used per unit	4 lbs.	10 lbs.

Eagle Brand has 1,000 lbs. of raw materials which can be used to produce Products X and Y.

Which one of the alternatives below should Eagle Brand accept in order to maximize contribution margin?

- a. 100 units of product Y.
- b. 250 units of product X.
- c. 200 units of product X and 20 units of product Y.
- d. 200 units of product X and 50 units of product Y.

178. *CSO: 2C1b LOS: 2C1b*

For the year just ended, Silverstone Company's sales revenue was \$450,000. Silverstone's fixed costs were \$120,000 and its variable costs amounted to \$270,000. For the current year sales are forecasted at \$500,000. If the fixed costs do not change, Silverstone's profits this year will be

- a. \$60,000.
- b. \$80,000.
- c. \$110,000.
- d. \$200,000.

179. *CSO: 2C1b LOS: 2C1e*

Breeze Company has a contribution margin of \$4,000 and fixed costs of \$1,000. If the total contribution margin increases by \$1,000, operating profit would

- a. decrease by \$1,000.
- b. increase by more than \$1,000.
- c. increase by \$1,000.
- d. remain unchanged.

180. *CSO: 2C1b LOS: 2C1b*

Wilkinson Company sells its single product for \$30 per unit. The contribution margin ratio is 45% and Wilkinson has fixed costs of \$10,000 per month. If 3,000 units are sold in the current month, Wilkinson's income would be

- a. \$30,500.
- b. \$49,500.
- c. \$40,500.
- d. \$90,000.

181. CSO: 2C1c LOS: 2C1h

Cervine Corporation makes motors for various products. Operating data and unit cost information for its products are presented below.

	<u>Product A</u>	<u>Product B</u>
Annual unit capacity	10,000	20,000
Annual unit demand	<u>10,000</u>	<u>20,000</u>
Selling price	\$100	\$80
Variable manufacturing cost	53	45
Fixed manufacturing cost	10	10
Variable selling & administrative	10	11
Fixed selling & administrative	5	4
Fixed other administrative	<u>2</u>	<u>-</u>
Unit operating profit	<u>\$ 20</u>	<u>\$10</u>
Machine hours per unit	2.0	1.5

Cervine has 40,000 productive machine hours available. What is the maximum total contribution margin that Cervine can generate in the coming year?

- a. \$665,000.
- b. \$689,992.
- c. \$850,000.
- d. \$980,000.

182. CSO: 2C1c LOS: 2C1h

Specialty Cakes Inc. produces two types of cakes, a 2 lbs. round cake and a 3 lbs. heart-shaped cake. Total fixed costs for the firm are \$94,000. Variable costs and sales data for the two types of cakes are presented below.

	<u>2 lbs. Round Cake</u>	<u>3 lbs. Heart-shape Cake</u>
Selling price per unit	\$12	\$20
Variable cost per unit	\$8	\$15
Current sales (units)	10,000	15,000

If the product sales mix were to change to three heart-shaped cakes for each round cake, the breakeven volume for each of these products would be

- a. 8,174 round cakes, 12,261 heart-shaped cakes.
- b. 12,261 round cakes, 8,174 heart-shaped cakes.
- c. 4,947 round cakes, 14,842 heart-shaped cakes.
- d. 15,326 round cakes, 8,109 heart-shaped cakes.



183. CSO: 2C1c LOS: 2C1e

Lazar Industries produces two products, Crates and Boxes. Per unit selling prices, costs, and resource utilization for these products are as follows.

	<u>Crates</u>	<u>Boxes</u>
Selling price	<u>\$20</u>	<u>\$30</u>
Direct material costs	\$ 5	\$ 5
Direct labor costs	8	10
Variable overhead costs	3	5
Variable selling costs	1	2
Machine hours per unit	2	4

Production of Crates and Boxes involves joint processes and use of the same facilities. The total fixed factory overhead cost is \$2,000,000 and total fixed selling and administrative costs are \$840,000. Production and sales are scheduled for 500,000 units of Crates and 700,000 units of Boxes. Lazar maintains no direct materials, work-in-process, or finished goods inventory.

Lazar can reduce direct material costs for Crates by 50% per unit, with no change in direct labor costs. However, it would increase machine-hour production time by 1-1/2 hours per unit. For Crates, variable overhead costs are allocated based on machine hours. What would be the effect on the total contribution margin if this change was implemented?

- a. \$125,000 increase.
- b. \$250,000 decrease.
- c. \$300,000 increase.
- d. \$1,250,000 increase.

184. CSO: 2C1c LOS: 2C1g

Ticker Company sells two products. Product A provides a contribution margin of \$3 per unit, and Product B provides a contribution margin of \$4 per unit. If Ticker's sales mix shifts toward Product A, which one of the following statements is **correct**?

- a. The total number of units necessary to break even will decrease.
- b. The overall contribution margin ratio will increase.
- c. Operating income will decrease if the total number of units sold remains constant.
- d. The contribution margin ratios for Products A and B will change.

185. CSO: 2C1c LOS: 2C1h

Lazar Industries produces two products, Crates and Trunks. Per unit selling prices, costs, and resource utilization for these products are as follows.

	<u>Crates</u>	<u>Trunks</u>
Selling price	<u>\$20</u>	<u>\$30</u>
Direct material costs	\$ 5	\$ 5
Direct labor costs	8	10
Variable overhead costs	3	5
Variable selling costs	1	2
Machine hours per unit	2	4

Production of Crates and Trunks involves joint processes and use of the same facilities. The total fixed factory overhead cost is \$2,000,000 and total fixed selling and administrative costs are \$840,000. Production and sales are scheduled for 500,000 Crates and 700,000 Trunks. Lazar has a normal capacity to produce a total of 2,000,000 units in any combination of Crates and Trunks, and maintains no direct materials, work-in-process, or finished goods inventory.

Due to plant renovations Lazar Industries will be limited to 1,000,000 machine hours. What is the maximum amount of contribution margin Lazar can generate during the renovation period?

- a. \$1,500,000.
- b. \$2,000,000.
- c. \$3,000,000.
- d. \$7,000,000.

186. CSO: 2C2a LOS: 2C2c

Johnson waits two hours in line to buy a ticket to an NCAA Final Four Tournament. The opportunity cost of buying the \$200 ticket is

- a. Johnson's best alternative use of the \$200.
- b. Johnson's best alternative use of the two hours it took to wait in line.
- c. the value of the \$200 to the ticket agent.
- d. Johnson's best alternative use of both the \$200 and the two hours spent in line.

187. CSO: 2C2a LOS: 2C2a

In a management decision process, the cost measurement of the benefits sacrificed due to selecting an alternative use of resources is **most** often referred to as a(n)

- a. relevant cost.
- b. sunk cost.
- c. opportunity cost.
- d. differential cost.

188. CSO: 2C2a LOS: 2C2a

In order to avoid pitfalls in relevant-cost analysis, management should focus on

- a. variable cost items that differ for each alternative.
- b. long-run fixed costs of each alternative.
- c. anticipated fixed costs and variable costs of all alternatives.
- d. anticipated revenues and costs that differ for each alternative.

189. CSO: 2C2a LOS: 2C2a

In a joint manufacturing process, joint costs incurred prior to a decision as to whether to process the products after the split-off point should be viewed as

- a. sunk costs.
- b. relevant costs.
- c. standard costs.
- d. differential costs.

190. CSO: 2C2a LOS: 2C2a

Jack Blaze wants to rent store space in a new shopping mall for the three month holiday shopping season. Blaze believes he has a new product available which has the potential for good sales. The product can be obtained on consignment at the cost of \$20 per unit and he expects to sell the item for \$100 per unit. Due to other business ventures, Blaze's risk tolerance is low. He recognizes that, as the product is entirely new, there is an element of risk. The mall management has offered Blaze three rental options: (1) a fixed fee of \$8,000 per month, (2) a fixed fee of \$3,990 per month plus 10% of Blaze's revenue, or (3) 30% of Blaze's revenues. Which one of the following actions would you recommend to Jack Blaze?

- a. Choose the first option no matter what Blaze expects the revenues to be.
- b. Choose the second option no matter what Blaze expects the revenues to be.
- c. Choose the second option only if Blaze expects revenues to exceed \$5,700.
- d. Choose the third option no matter what Blaze expects the revenues to be.

191. CSO: 2C2a LOS: 2C2a

Profits that are lost by moving an input from one use to another are referred to as

- a. out-of-pocket costs.
- b. cannibalization charges.
- c. replacement costs.
- d. opportunity costs.

192. CSO: 2C2a LOS: 2C2a

In differential cost analysis, which one of the following **best** fits the description of a sunk cost?

- a. Direct materials required in the manufacture of a table.
- b. Purchasing department costs incurred in acquiring material.
- c. Cost of the forklift driver to move the material to the manufacturing floor.
- d. Cost of a large crane used to move materials.

193. CSO: 2C2a LOS: 2C2d

Refrigerator Company manufactures ice-makers for installation in refrigerators. The costs per unit, for 20,000 units of ice-makers, are as follows.

Direct materials	\$ 7
Direct labor	12
Variable overhead	5
Fixed overhead	<u>10</u>
Total costs	<u>\$34</u>

Cool Compartments Inc. has offered to sell 20,000 ice-makers to Refrigerator Company for \$28 per unit. If Refrigerator accepts Cool Compartments' offer the plant would be idled and fixed overhead amounting to \$6 per unit could be eliminated. The total relevant costs associated with the manufacture of ice-makers amount to

- a. \$480,000.
- b. \$560,000.
- c. \$600,000.
- d. \$680,000.

194. CSO: 2C2b LOS: 2C2e

Edwards Products has just developed a new product with a manufacturing cost of \$30. The Marketing Director has identified three marketing approaches for this new product.

Approach X Set a selling price of \$36 and have the firm's sales staff sell the product at a 10% commission with no advertising program. Estimated annual sales would be 10,000 units.

Approach Y Set a selling price of \$38, have the firm's sales staff sell the product at a 10% commission, and back them up with a \$30,000 advertising program. Estimated annual sales would be 12,000 units.

Approach Z Rely on wholesalers to handle the product. Edwards would sell the new product to the wholesalers at \$32 per unit and incur no selling expenses. Estimated annual sales would be 14,000 units.

Rank the three alternatives in order of net profit, from highest net profit to lowest.

- a. X, Y, Z.
- b. Y, Z, X.
- c. Z, X, Y.
- d. Z, Y, X.

195. CSO: 2C2b LOS: 2C2f

Auburn Products Inc. has compiled the following daily cost information for its manufacturing operation.

<u>Output (units)</u>	<u>Fixed Cost</u>	<u>Variable Cost</u>
0	\$2,000	\$ 0
1	2,000	200
2	2,000	380
3	2,000	550
4	2,000	700
5	2,000	860
6	2,000	1,040
7	2,000	1,250
8	2,000	1,500

Auburn's average total cost at an output level of 3 units is

- a. \$667.
- b. \$850.
- c. \$1,217.
- d. \$2,550.

196. CSO: 2C2b LOS: 2C2f

Daily costs for Kelso Manufacturing include \$1,000 of fixed costs and total variable costs are shown below.

Unit Output	10	11	12	13	14	15
Cost	\$125	\$250	\$400	\$525	\$700	\$825

The average total cost at an output level of 11 units is

- a. \$113.64.
- b. \$125.00.
- c. \$215.91.
- d. \$250.00.

197. CSO: 2C2b LOS: 2C2e

Harper Products' cost information for the normal range of output in a month is shown below.

<u>Output in units</u>	<u>Total Cost</u>
20,000	\$3,000,000
22,500	3,325,000
25,000	3,650,000

What is Harper's short-run marginal cost?

- a. \$26.
- b. \$130.
- c. \$146.
- d. \$150.

198. CSO: 2C2b LOS: 2C2e

Auburn Products Inc. has compiled the following daily cost information for its manufacturing operation.

<u>Output (units)</u>	<u>Fixed Cost</u>	<u>Variable Cost</u>
0	\$2,000	\$ 0
1	2,000	200
2	2,000	380
3	2,000	550
4	2,000	700
5	2,000	860
6	2,000	1,040
7	2,000	1,250
8	2,000	1,500

Auburn's marginal cost for the 7th unit is

- a. \$179.
- b. \$210.
- c. \$286.
- d. \$464.

199. CSO: 2C2b LOS: 2C2e

Daily costs for Kelso Manufacturing include \$1,250 in fixed costs and total variable costs are shown below.

Unit Output	10	11	12	13	14	15
Cost	\$150	\$300	\$480	\$620	\$750	\$900

The marginal cost of the 12th unit is

- a. \$180.00.
- b. \$140.00.
- c. \$104.16.
- d. \$40.00.

200. CSO: 2C2b LOS: 2C2f

The total cost of producing 100 units of a good is \$800. If a firm's average variable cost is \$5 per unit, then the firm's

- a. average fixed cost is \$3.
- b. total variable cost is \$300.
- c. marginal cost is \$3.
- d. marginal cost is \$8.

201. CSO: 2C2b LOS: 2C2e

Daily sales and cost data for Crawford Industries are shown below.

Sales		Total
Units	\$	Costs
20	\$2,000	\$1,200
21	2,090	1,250
22	2,170	1,290
23	2,240	1,330
24	2,300	1,380
25	2,350	1,440

The marginal cost of the 23rd unit is

- a. \$30.00.
- b. \$40.00.
- c. \$50.00.
- d. \$57.83.

202. CSO: 2C2b LOS: 2C2e

Parker Manufacturing is analyzing the market potential for its specialty turbines. Parker developed its pricing and cost structures for their specialty turbines over various relevant ranges. The pricing and cost data for each relevant range are presented below.

Units produced and sold	<u>1 - 5</u>	<u>6 - 10</u>	<u>11 - 15</u>	<u>16 - 20</u>
Total fixed costs	\$200,000	\$400,000	\$600,000	\$800,000
Unit variable cost	50,000	50,000	45,000	45,000
Unit selling price	100,000	100,000	100,000	100,000

Which one of the following production/sales levels would produce the highest operating income for Parker?

- a. 8 units.
- b. 10 units.
- c. 14 units.
- d. 17 units.



203. CSO: 2C2c LOS: 2C2h

Johnson Company manufactures a variety of shoes, and has received a special one-time-only order directly from a wholesaler. Johnson has sufficient idle capacity to accept the special order to manufacture 15,000 pairs of sneakers at a price of \$7.50 per pair. Johnson's normal selling price is \$11.50 per pair of sneakers. Variable manufacturing costs are \$5.00 per pair and fixed manufacturing costs are \$3.00 a pair. Johnson's variable selling expense for its normal line of sneakers is \$1.00 per pair. What would the effect on Johnson's operating income be if the company accepted the special order?

- a. Decrease by \$60,000.
- b. Increase by \$22,500.
- c. Increase by \$37,500.
- d. Increase by \$52,500.

204. CSO: 2C2c LOS: 2C2h

The Robo Division, a decentralized division of GMT Industries, has been approached to submit a bid for a potential project for the RSP Company. Robo Division has been informed by RSP that they will not consider bids over \$8,000,000. Robo Division purchases its materials from the Cross Division of GMT Industries. There would be no additional fixed costs for either the Robo or Cross Divisions. Information regarding this project is as follows.

	<u>Cross Division</u>	<u>Robo Division</u>
Variable Costs	\$1,500,000	\$4,800,000
Transfer Price	3,700,000	-

If Robo Division submits a bid for \$8,000,000, the amount of contribution margin recognized by the Robo Division and GMT Industries, respectively, is

- a. \$(500,000) and \$(2,000,000).
- b. \$3,200,000 and \$(500,000).
- c. \$(500,000) and \$1,700,000.
- d. \$3,200,000 and \$1,700,000.

205. CSO: 2C2c LOS: 2C2g

Basic Computer Company (BCC) sells its micro-computers using bid pricing. It develops bids on a full cost basis. Full cost includes estimated material, labor, variable overheads, fixed manufacturing overheads, and reasonable incremental computer assembly administrative costs, plus a 10% return on full cost. BCC believes bids in excess of \$925 per computer are not likely to be considered.

BCC's current cost structure, based on its normal production levels, is \$500 for materials per computer and \$20 per labor hour. Assembly and testing of each computer requires 12 labor hours. BCC's variable manufacturing overhead is \$2 per labor hour, fixed manufacturing overhead is \$3 per labor hour, and incremental administrative costs are \$8 per computer assembled.

The company has received a request from the School Board for 500 computers. BCC's management expects heavy competition in bidding for this job. As this is a very large order for BCC, and could lead to other educational institution orders, management is extremely interested in submitting a bid which would win the job, but at a price high enough so that current net income will not be unfavorably impacted. Management believes this order can be absorbed within its current manufacturing facility. Which one of the following bid prices should be recommended to BCC's management?

- a. \$764.00.
- b. \$772.00.
- c. \$849.20.
- d. \$888.80.

206. CSO: 2C2c LOS: 2C2g

The loss of a key customer has temporarily caused Bedford Machining to have some excess manufacturing capacity. Bedford is considering the acceptance of a special order, one that involves Bedford's most popular product. Consider the following types of costs.

- I. Variable costs of the product
- II. Fixed costs of the product
- III. Direct fixed costs associated with the order
- IV. Opportunity cost of the temporarily idle capacity

Which one of the following combinations of cost types should be considered in the special order acceptance decision?

- a. I and II.
- b. I and IV.
- c. II and III.
- d. I, III, and IV.

207. CSO: 2C2c LOS: 2C2g

Raymund Inc. currently sells its only product to Mall-Stores. Raymund has received a one-time-only order for 2,000 units from another buyer. Sale of the special order items will not require any additional selling effort. Raymund has a manufacturing capacity to produce 7,000 units. Raymund has an effective income tax rate of 40%. Raymund's Income Statement, before consideration of the one-time-only order, is as follows.

Sales (5,000 units at \$20 per unit)		\$100,000
Variable manufacturing costs	\$50,000	
Variable selling costs	<u>15,000</u>	<u>65,000</u>
Contribution margin		35,000
Fixed manufacturing costs	16,000	
Fixed selling costs	<u>4,000</u>	<u>20,000</u>
Operating income		15,000
Income taxes		<u>6,000</u>
Net income		<u>\$ 9,000</u>

In negotiating a price for the special order, Raymund should set the minimum per unit selling price at

- a. \$10.
- b. \$13.
- c. \$17.
- d. \$18.

208. CSO: 2C2c LOS: 2C2d

Two months ago, Hickory Corporation purchased 4,500 pounds of Kaylene at a cost of \$15,300. The market for this product has become very strong, with the price jumping to \$4.05 per pound. Because of the demand, Hickory can buy or sell Kaylene at this price. Hickory recently received a special order inquiry that would require the use of 4,200 pounds of Kaylene. In deciding whether to accept the order, management must evaluate a number of decision factors. Without regard to income taxes, which one of the following combination of factors correctly depicts relevant and irrelevant decision factors, respectively?

	<u>Relevant Decision Factor</u>	<u>Irrelevant Decision Factor</u>
a.	Remaining 300 pounds of Kaylene	Market price of \$4.05 per lb.
b.	Market price of \$4.05 per lb.	Purchase price of \$3.40 per lb.
c.	Purchase price of \$3.40 per lb.	Market price of \$4.05 per lb.
d.	4,500 pounds of Kaylene	Remaining 300 pounds of Kaylene.

209. CSO: 2C2c LOS: 2C2h

Gardener Company currently is using its full capacity of 25,000 machine hours to manufacture product XR-2000. LJB Corporation placed an order with Gardener for the manufacture of 1,000 units of KT-6500. LJB would normally manufacture this component. However, due to a fire at its plant, LJB needs to purchase these units to continue manufacturing other products. This is a onetime special order. The following reflects unit cost data, and selling prices.

	<u>KT-6500</u>	<u>XR-2000</u>
Material	\$27	\$24
Direct labor	12	10
Variable overhead	6	5
Fixed overhead	48	40
Variable selling & administrative	5	4
Fixed selling & administrative	12	10
Normal selling price	\$125	\$105
Machine hours required	3	4

What is the minimum unit price that Gardener should charge LJB to manufacture 1,000 units of KT-6500?

- a. \$93.00.
- b. \$96.50.
- c. \$110.00.
- d. \$125.00.

210. CSO: 2C2c LOS: 2C2n

Green Corporation builds custom-designed machinery. A review of selected data and the company's pricing policies revealed the following.

- A 10% commission is paid on all sales orders.
- Variable and fixed factory overheads total 40% and 20%, respectively, of direct labor.
- Corporate administrative costs amount to 10% of direct labor.
- When bidding on jobs, Green adds a 25% markup to the total of all factory and administrative costs to cover income taxes and produce a profit.
- The firm's income tax rate is 40%.

The company expects to operate at a maximum of 80% of practical capacity.

Green recently received an invitation to bid on the manufacture of some custom machinery for Kennendale, Inc. For this project, Green's production accountants estimate the material and labor costs will be \$66,000 and \$120,000, respectively. Accordingly, Green submitted a bid to Kennendale in the amount of \$375,000. Feeling Green's bid was too high, Kennendale countered with a price of \$280,000. Which one of the following options should be recommended to Green's management?

- a. Accept the counteroffer because the order will increase operating income.
- b. Accept the counteroffer even though the order will decrease operating income.
- c. Reject the counteroffer even though the order will increase operating income.
- d. Reject the counteroffer because the order will decrease operating income.

211. CSO: 2C2d LOS: 2C2n

Synergy Inc. produces a component that is popular in many refrigeration systems. Data on three of the five different models of this component are as follows.

	Model		
	A	B	C
Volume needed (units)	<u>5,000</u>	<u>6,000</u>	<u>3,000</u>
Manufacturing costs			
Variable direct costs	\$10	\$24	\$20
Variable overhead	5	10	15
Fixed overhead	<u>11</u>	<u>20</u>	<u>17</u>
Total manufacturing costs	<u>\$26</u>	<u>\$54</u>	<u>\$52</u>
Cost if purchased	<u>\$21</u>	<u>\$42</u>	<u>\$39</u>

Synergy applies variable overhead on the basis of machine hours at the rate of \$2.50 per hour. Models A and B are manufactured in the Freezer Department, which has a capacity of 28,000 machine processing hours. Which one of the following options should be recommended to Synergy's management?

- Purchase all three products in the quantities required.
- Manufacture all three products in the quantities required.
- The Freezer Department's manufacturing plan should include 5,000 units of Model A and 4,500 units of Model B.
- The Freezer Department's manufacturing plan should include 2,000 units of Model A and 6,000 units of Model B.

212. CSO: 2C2d LOS: 2C2d

Refrigerator Company manufactures ice-makers for installation in refrigerators. The costs per unit, for 20,000 units of ice-makers, are as follows.

Direct materials	\$ 7
Direct labor	12
Variable overhead	5
Fixed overhead	<u>10</u>
Total costs	<u>\$34</u>

Cool Compartments Inc. has offered to sell 20,000 ice-makers to Refrigerator Company for \$28 per unit. If Refrigerator accepts Cool Compartments' offer, the facilities used to manufacture ice-makers could be used to produce water filtration units. Revenues from the sale of water filtration units are estimated at \$80,000, with variable costs amounting to 60% of sales. In addition, \$6 per unit of the fixed overhead associated with the manufacture of ice-makers could be eliminated.

For Refrigerator Company to determine the **most** appropriate action to take in this situation, the total relevant costs of make vs. buy, respectively, are

- \$600,000 vs. \$560,000.
- \$648,000 vs. \$528,000.
- \$600,000 vs. \$528,000.
- \$680,000 vs. \$440,000.

213. CSO: 2C2d LOS: 2C2d

Sunshine Corporation is considering the purchase of a new machine for \$800,000. The machine is capable of producing 1.6 million units of product over its useful life. The manufacturer's engineering specifications state that the machine-related cost of producing each unit of product should be \$.50. Sunshine's total anticipated demand over the asset's useful life is 1.2 million units. The average cost of materials and labor for each unit is \$.40. In considering whether to buy the new machine, would you recommend that Sunshine use the manufacturer's engineering specification of machine-related unit production cost?

- No, the machine-related cost of producing each unit is \$2.00.
- No, the machine-related cost of producing each unit is \$.67.
- No, the machine-related cost of producing each unit is \$.90.
- Yes, the machine-related cost of producing each unit is \$.50.

214. CSO: 2C2d LOS: 2C2g

Aril Industries is a multiproduct company that currently manufactures 30,000 units of Part 730 each month for use in production. The facilities now being used to produce Part 730 have fixed monthly overhead costs of \$150,000, and a theoretical capacity to produce 60,000 units per month. If Aril were to buy Part 730 from an outside supplier, the facilities would be idle and 40% of fixed costs would continue to be incurred. There are no alternative uses for the facilities. The variable production costs of Part 730 are \$11 per unit. Fixed overhead is allocated based on planned production levels.

If Aril Industries continues to use 30,000 units of Part 730 each month, it would realize a net benefit by purchasing Part 730 from an outside supplier only if the supplier's unit price is less than

- a. \$12.00.
- b. \$12.50.
- c. \$13.00.
- d. \$14.00.

215. CSO: 2C2d LOS: 2C2a

Verla Industries is trying to decide which one of the following two options to pursue. Either option will take effect on January 1st of the next year.

Option One - Acquire a New Finishing Machine.

The cost of the machine is \$1,000,000 and will have a useful life of five years. Net pre-tax cash flows arising from savings in labor costs will amount to \$100,000 per year for five years.

Depreciation expense will be calculated using the straight-line method for both financial and tax reporting purposes. As an incentive to purchase, Verla will receive a trade-in allowance of \$50,000 on their current fully depreciated finishing machine.

Option Two - Outsource the Finishing Work.

Verla can outsource the work to LM Inc. at a cost of \$200,000 per year for five years. If they outsource, Verla will scrap their current fully depreciated finishing machine.

Verla's effective income tax rate is 40%. The weighted-average cost of capital is 10%.

When comparing the two options, the \$50,000 trade-in allowance would be considered

- a. irrelevant because it does not affect taxes.
- b. relevant because it is a decrease in cash outflow.
- c. irrelevant because it does not affect cash.
- d. relevant because it is an increase in cash outflows.



216. CSO: 2C2e LOS: 2C2n

Jones Enterprises manufactures 3 products, A, B, and C. During the month of May Jones' production, costs, and sales data were as follows.

	Products			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>
Units of production	<u>30,000</u>	<u>20,000</u>	<u>70,000</u>	<u>120,000</u>
Joint production costs to split-off point				\$480,000
Further processing costs	\$ -	\$60,000	\$140,000	
Unit sales price				
At split-off	3.75	5.50	10.25	
After further processing	-	8.00	12.50	

Based on the above information, which one of the following alternatives should be recommended to Jones' management?

- Sell both Product B and Product C at the split-off point.
- Process Product B further but sell Product C at the split-off point.
- Process Product C further but sell Product B at the split-off point.
- Process both Products B and C further.

217. CSO: 2C2e LOS: 2C2k

Oakes Inc. manufactured 40,000 gallons of Mononate and 60,000 gallons of Beracyl in a joint production process, incurring \$250,000 of joint costs. Oakes allocates joint costs based on the physical volume of each product produced. Mononate and Beracyl can each be sold at the split-off point in a semifinished state or, alternatively, processed further. Additional data about the two products are as follows.

	<u>Mononate</u>	<u>Beracyl</u>
Sales price per gallon at split-off	\$7	\$15
Sales price per gallon if processed further	\$10	\$18
Variable production costs if processed further	\$125,000	\$115,000

An assistant in the company's cost accounting department was overheard saying "...that when both joint and separable costs are considered, the firm has no business processing either product beyond the split-off point. The extra revenue is simply not worth the effort." Which of the following strategies should be recommended for Oakes?

- |    | <u>Mononate</u>   | <u>Beracyl</u>     |
|----|-------------------|--------------------|
| a. | Sell at split-off | Sell at split-off. |
| b. | Sell at split-off | Process further.   |
| c. | Process further   | Sell at split-off. |
| d. | Process further   | Process further.   |

218. CSO: 2C2f LOS: 2C2k

Current business segment operations for Whitman, a mass retailer, are presented below.

	<u>Merchandise</u>	<u>Automotive</u>	<u>Restaurant</u>	<u>Total</u>
Sales	\$500,000	\$400,000	\$100,000	\$1,000,000
Variable costs	300,000	200,000	70,000	570,000
Fixed costs	<u>100,000</u>	<u>100,000</u>	<u>50,000</u>	<u>250,000</u>
Operating income (loss)	<u>\$100,000</u>	<u>\$100,000</u>	<u>\$(20,000)</u>	<u>\$ 180,000</u>

Management is contemplating the discontinuance of the Restaurant segment since “it is losing money.” If this segment is discontinued, \$30,000 of its fixed costs will be eliminated. In addition, Merchandise and Automotive sales will decrease 5% from their current levels. What will Whitman’s total contribution margin be if the Restaurant segment is discontinued?

- a. \$160,000.
- b. \$220,000.
- c. \$367,650.
- d. \$380,000.

219. CSO: 2C2f LOS: 2C2g

Current business segment operations for Whitman, a mass retailer, are presented below.

	<u>Merchandise</u>	<u>Automotive</u>	<u>Restaurant</u>	<u>Total</u>
Sales	\$500,000	\$400,000	\$100,000	\$1,000,000
Variable costs	300,000	200,000	70,000	570,000
Fixed costs	<u>100,000</u>	<u>100,000</u>	<u>50,000</u>	<u>250,000</u>
Operating income (loss)	<u>\$100,000</u>	<u>\$100,000</u>	<u>\$(20,000)</u>	<u>\$ 180,000</u>

Management is contemplating the discontinuance of the Restaurant segment since “it is losing money.” If this segment is discontinued, \$30,000 of its fixed costs will be eliminated. In addition, Merchandise and Automotive sales will decrease 5% from their current levels. When considering the decision, Whitman’s controller advised that one of the financial aspects Whitman should review is contribution margin. Which one of the following options reflects the current contribution margin ratios for each of Whitman’s business segments?

- |    | <u>Retailing</u> | <u>Automotive</u> | <u>Restaurant</u> |
|----|------------------|-------------------|-------------------|
| a. | 60%              | 50%               | 30%.              |
| b. | 60%              | 50%               | 70%.              |
| c. | 40%              | 50%               | 70%.              |
| d. | 40%              | 50%               | 30%.              |

220. CSO: 2C2f LOS: 2C2d

Capital Company has decided to discontinue a product produced on a machine purchased four years ago at a cost of \$70,000. The machine has a current book value of \$30,000. Due to technologically improved machinery now available in the marketplace the existing machine has no current salvage value. The company is reviewing the various aspects involved in the production of a new product. The engineering staff advised that the existing machine can be used to produce the new product. Other costs involved in the production of the new product will be materials of \$20,000 and labor priced at \$5,000.

Ignoring income taxes, the costs relevant to the decision to produce or not to produce the new product would be

- a. \$25,000.
- b. \$30,000.
- c. \$55,000.
- d. \$95,000.

221. CSO: 2C2f LOS: 2C2d

Reynolds Inc. manufactures several different products, including a premium lawn fertilizer and weed killer that is popular in hot, dry climates. Reynolds is currently operating at less than full capacity because of market saturation for lawn fertilizer. Sales and cost data for a 40-pound bag of Reynolds lawn fertilizer is as follows.

Selling price		\$18.50
Production cost		
Materials and labor	\$12.25	
Variable overhead	3.75	
Allocated fixed overhead	<u>4.00</u>	<u>20.00</u>
Income (loss) per bag		<u><u>\$(1.50)</u></u>

On the basis of this information, which one of the following alternatives should be recommended to Reynolds management?

- a. Select a different cost driver to allocate its overhead.
- b. Drop this product from its product line.
- c. Continue to produce and market this product.
- d. Increase output and spread fixed overhead over a larger volume base.

222. CSO: 2C2f LOS: 2C2k

Following are the operating results of the two segments of Parklin Corporation.

	<u>Segment A</u>	<u>Segment B</u>	<u>Total</u>
Sales	\$10,000	\$15,000	\$25,000
Variable costs of goods sold	4,000	8,500	12,500
Fixed costs of goods sold	<u>1,500</u>	<u>2,500</u>	<u>4,000</u>
Gross margin	4,500	4,000	8,500
Variable selling and administrative	2,000	3,000	5,000
Fixed selling and administrative	<u>1,500</u>	<u>1,500</u>	<u>3,000</u>
Operating income (loss)	<u>\$ 1,000</u>	<u>\$ (500)</u>	<u>\$ 500</u>

Variable costs of goods sold are directly related to the operating segments. Fixed costs of goods sold are allocated to each segment based on the number of employees. Fixed selling and administrative expenses are allocated equally. If Segment B is eliminated, \$1,500 of fixed costs of goods sold would be eliminated. Assuming Segment B is closed, the effect on operating income would be

- a. an increase of \$500.
- b. an increase of \$2,000.
- c. a decrease of \$2,000.
- d. a decrease of \$2,500.

223. CSO: 2C2f LOS: 2C2d

Grapevine Corporation produces two joint products, JP-1 and JP-2, and a single by-product, BP-1, in Department 2 of its manufacturing plant. JP-1 is subsequently transferred to Department 3 where it is refined into a more expensive, higher-priced product, JP-1R, and a by-product known as BP-2. Recently, Santa Fe Company introduced a product that would compete directly with JP-1R and, as a result, Grapevine must reevaluate its decision to process JP-1 further. The market for JP-1 will not be affected by Santa Fe's product, and Grapevine plans to continue production of JP-1, even if further processing is terminated. Should this latter action be necessary, Department 3 will be dismantled.

Which of the following items should Grapevine consider in its decision to continue or terminate Department 3 operations?

1. The selling price per pound of JP-1.
2. The total hourly direct labor cost in Department 3.
3. Unit marketing and packaging costs for BP-2.
4. Supervisory salaries of Department 3 personnel who will be transferred elsewhere in the plant, if processing is terminated.
5. Department 2 joint cost allocated to JP-1 and transferred to Department 3.
6. The cost of existing JP-1R inventory.

- a. 2, 3, 4.
- b. 1, 2, 3.
- c. 2, 3, 5, 6.
- d. 1, 2, 3, 4, 5.

224. CSO: 2C2f LOS: 2C2k

The Doll House, a very profitable company, plans to introduce a new type of doll to its product line. The sales price and costs for the new dolls are as follows.

Selling price per doll	\$100
Variable cost per doll	\$60
Incremental annual fixed costs	\$456,000
Income tax rate	30%

If 10,000 new dolls are produced and sold, the effect on Doll House's profit (loss) would be

- a. \$(176,000).
- b. \$(56,000).
- c. \$(39,200).
- d. \$280,000.

225. CSO: 2C2f LOS: 2C2n

The Furniture Company currently has three divisions: Maple, Oak, and Cherry. The oak furniture line does not seem to be doing well and the president of the company is considering dropping this line. If it is dropped, the revenues associated with the Oak Division will be lost and the related variable costs saved. Also, 50% of the fixed costs allocated to the oak furniture line would be eliminated. The income statements, by divisions, are as follows.

	<u>Maple</u>	<u>Oak</u>	<u>Cherry</u>
Sales	\$55,000	\$85,000	\$100,000
Variable Costs	<u>40,000</u>	<u>72,000</u>	<u>82,000</u>
Contribution Margin	15,000	13,000	18,000
Fixed costs	<u>10,000</u>	<u>14,000</u>	<u>10,200</u>
Operating profit (loss)	<u>\$ 5,000</u>	<u>\$(1,000)</u>	<u>\$ 7,800</u>

Which one of the following options should be recommended to the president of the company?

- Continue operating the Oak Division as discontinuance would result in a total operating loss of \$1,200.
- Continue operating the Oak Division as discontinuance would result in a \$6,000 decline in operating profits.
- Discontinue the Oak Division which would result in a \$1,000 increase in operating profits.
- Discontinue the Oak Division which would result in a \$7,000 increase in operating profits.

226. CSO: 2C2g LOS: 2C2l

Milton Manufacturing occasionally has capacity problems in its metal shaping division, where the chief cost driver is machine hours. In evaluating the attractiveness of its individual products for decision-making purposes, which measurement tool should the firm select?

- |    | <u>If machine hours do not<br/>constrain the number<br/>of units to be produced</u> | <u>If machine hours<br/>constrain the number<br/>of units to be produced</u> |
|----|---|--|
| a. | Contribution margin   | Contribution margin per machine hour.  |
| b. | Gross profit  | Contribution margin.   |
| c. | Contribution margin   | Contribution margin ratio.   |
| d. | Contribution margin per<br>machine hour   | Contribution margin.   |

227. CSO: 2C2g LOS: 2C2I

Elgers Company produces valves for the plumbing industry. Elgers' per unit sales price and variable costs are as follows.

Sales price	\$12
Variable costs	8

Elgers' practical plant capacity is 40,000 units. Elgers' total fixed costs aggregate \$48,000 and it has a 40% effective tax rate. The maximum net profit that Elger can earn is

- a. \$48,000.
- b. \$67,200.
- c. \$96,000.
- d. \$112,000.

228. CSO: 2C2g LOS: 2C2I

Dayton Corporation manufactures pipe elbows for the plumbing industry. Dayton's per unit sales price and variable costs are as follows.

Sales price	\$10
Variable costs	7

Dayton's practical plant capacity is 35,000 units. Dayton's total fixed costs amount to \$42,000, and the company has a 50% effective tax rate. If Dayton produced and sold 30,000 units, net income would be

- a. \$24,000.
- b. \$45,000.
- c. \$48,000.
- d. \$90,000.

229. CSO: 2C2g LOS: 2C2I

Raymund Inc., a bearings manufacturer, has the capacity to produce 7,000 bearings per month. The company is planning to replace a portion of its labor intensive production process with a highly automated process, which would increase Raymund's fixed manufacturing costs by \$30,000 per month and reduce its variable costs by \$5 per unit.

Raymund's Income Statement for an average month is as follows.

Sales (5,000 units at \$20 per unit)		\$100,000
Variable manufacturing costs	\$50,000	
Variable selling costs	<u>15,000</u>	<u>65,000</u>
Contribution margin		35,000
Fixed manufacturing costs	16,000	
Fixed selling costs	<u>4,000</u>	<u>20,000</u>
Operating income		<u>\$ 15,000</u>

If Raymund installs the automated process, the company's monthly operating income would be

- \$5,000.
- \$10,000.
- \$30,000.
- \$40,000.

230. CSO: 2C2g LOS: 2C2I

Phillips and Company produces educational software. Its current unit cost, based upon an anticipated volume of 150,000 units, is as follows.

Selling price	\$150
Variable costs	60
Contribution margin	90
Fixed costs	60
Operating income	30

Sales for the coming year are estimated at 175,000 units, which is within the relevant range of Phillip's cost structure. Cost management initiatives are expected to yield a 20% reduction in variable costs and a reduction of \$750,000 in fixed costs. Phillip's cost structure for the coming year will include a

- per unit contribution margin of \$72 and fixed costs of \$55.
- total contribution margin of \$15,300,000 and fixed costs of \$8,250,000.
- variable cost ratio of 32% and operating income of \$9,600,000.
- contribution margin ratio of 68% and operating income of \$7,050,000.



231. CSO: 2C2g LOS: 2C2d

Cervine Corporation makes two types of motors for use in various products. Operating data and unit cost information for its products are presented below.

	<u>Product A</u>	<u>Product B</u>
Annual unit capacity	10,000	20,000
Annual unit demand	<u>10,000</u>	<u>20,000</u>
Selling price	\$100	\$80
Variable manufacturing cost	53	45
Fixed manufacturing cost	10	10
Variable selling & administrative	10	11
Fixed selling & administrative	5	4
Fixed other administrative	<u>2</u>	<u>0</u>
Unit operating profit	<u>\$ 20</u>	<u>\$10</u>
Machine hours per unit	2.0	1.5

Cervine has 40,000 productive machine hours available. The relevant contribution margins, per machine hour for each product, to be utilized in making a decision on product priorities for the coming year, are

	<u>Product A</u>	<u>Product B</u>
a.	\$17.00	\$14.00.
b.	\$18.50	\$16.00.
c.	\$20.00	\$10.00.
d.	\$37.00	\$24.00.

232. CSO: 2C2g LOS: 2C2n

Lark Industries accepted a contract to provide 30,000 units of Product A and 20,000 units of Product B. Lark's staff developed the following information with regard to meeting this contract.

	<u>Product A</u>	<u>Product B</u>	<u>Total</u>
Selling Price	\$75	\$125	
Variable costs	\$30	\$48	
Fixed overhead			\$1,600,000
Machine hours required	3	5	
Machine hours available			160,000
Cost if outsourced	\$45	\$60	

Lark's operations manager has identified the following alternatives. Which alternative should be recommended to Lark's management?

- Make 30,000 units of Product A, utilize the remaining capacity to make Product B, and outsource the remainder.
- Make 25,000 units of Product A, utilize the remaining capacity to make Product B, and outsource the remainder.
- Make 20,000 units of Product A, utilize the remaining capacity to make Product B, and outsource the remainder.
- Rent additional capacity of 30,000 machine hours which will increase fixed costs by \$150,000.

233. CSO: 2C2g LOS: 2C2n

Aspen Company plans to sell 12,000 units of product XT and 8,000 units of product RP. Aspen has a capacity of 12,000 productive machine hours. The unit cost structure and machine hours required for each product is as follows.

<u>Unit Costs</u>	<u>XT</u>	<u>RP</u>
Materials	\$37	\$24
Direct labor	12	13
Variable overhead	6	3
Fixed overhead	37	38
Machine hours required	1.0	1.5

Aspen can purchase 12,000 units of XT at \$60 and/or 8,000 units of RP at \$45. Based on the above, which one of the following actions should be recommended to Aspen's management?

- Produce XT internally and purchase RP.
- Produce RP internally and purchase XT.
- Purchase both XT and RP.
- Produce both XT and RP.

234. *CSO: 2C3a LOS: 2C3d*  
Which one of the following would cause the demand curve for bagels to shift to the left?
- a. A decrease in the cost of muffins.
  - b. An increase in the population.
  - c. A decrease in the price of bagels.
  - d. An increase in the supply of bagels.
235. *CSO: 2C3a LOS: 2C3d*  
Which one of the following would cause the demand curve for prepared meals sold in supermarkets to shift to the right?
- a. An increase in the price of prepared meals.
  - b. An increase in consumer income.
  - c. A decrease in the price of restaurant meals.
  - d. An increase in the supply of prepared meals.
236. *CSO: 2C3a LOS: 2C3n*  
If the demand for a product is elastic, a price increase will result in
- a. no change in total revenue.
  - b. an increase in total revenue.
  - c. a decrease in total revenue.
  - d. an indeterminate change in revenue.
237. *CSO: 2C3a LOS: 2C3b*  
The advantages of incorporating full product costs in pricing decisions include all the following **except**
- a. ease in identifying unit fixed costs with individual products.
  - b. full product cost recovery.
  - c. the promotion of price stability.
  - d. a pricing formula that meets the cost-benefit test; i.e., simplicity.

238. CSO: 2C3a LOS: 2C3p

An economist determined the following market data for a commodity.

<u>Price</u>	<u>Quantity Supplied</u>	<u>Quantity Demanded</u>
\$25	250	750
50	500	500
75	750	250
100	1,000	0

Based on this information, which one of the following statements is correct?

- a. In the short-term, there would be excess supply at a price of \$40.
- b. In the long-run, if producers' costs per unit decline, then a reasonable market clearing price could be \$65.
- c. In the short-term, there would be excess demand at a price of \$70.
- d. In the long-run, if producers' costs per unit increase, then a reasonable market clearing price could be \$70.

239. CSO: 2C3a LOS: 2C3m

If a product's price elasticity of demand is greater than one, then a 1% price increase will cause the quantity demanded to

- a. increase by more than 1%.
- b. increase by less than 1%.
- c. decrease by less than 1%.
- d. decrease by more than 1%.

240. CSO: 2C3a LOS: 2C3o

If the demand for a good is elastic, then a(n)

- a. decrease in price will increase total revenue.
- b. increase in price will increase total revenue.
- c. decrease in price will decrease total revenue.
- d. increase in price will have no effect on total revenue.

241. CSO: 2C3a LOS: 2C3c

Leader Industries is planning to introduce a new product, DMA. It is expected that 10,000 units of DMA will be sold. The full product cost per unit is \$300. Invested capital for this product amounts to \$20 million. Leader's target rate of return on investment is 20%. The markup percentage for this product, based on operating income as a percentage of full product cost, will be

- a. 42.9%.
- b. 57.1%.
- c. 133.3%.
- d. 233.7%.

242. CSO: 2C3a LOS: 2C3b

Which one of the following situations **best** lends itself to a cost-based pricing approach?

- a. A paper manufacturer negotiating the price for supplying copy paper to a new mass merchandiser of office products.
- b. An industrial equipment fabricator negotiating pricing for one of its standard models with a major steel manufacturer.
- c. A computer component manufacturer debating pricing terms with a customer in a new channel of distribution.
- d. A computer component manufacturer debating pricing with a new customer for a made to order, state of the art application.

243. CSO: 2C3a LOS: 2C3r

Basic Computer Company (BCC) sells its microcomputers using bid pricing. It develops its bids on a full cost basis. Full cost includes estimated material, labor, variable overheads, fixed manufacturing overheads, and reasonable incremental computer assembly administrative costs, plus a 10% return on full cost. BCC believes bids in excess of \$1,050 per computer are not likely to be considered.

BCC's current cost structure, based on its normal production levels, is \$500 for materials per computer and \$20 per labor hour. Assembly and testing of each computer requires 17 labor hours. BCC expects to incur variable manufacturing overhead of \$2 per labor hour, fixed manufacturing overhead of \$3 per labor hour, and incremental administrative costs of \$8 per computer assembled.

BCC has received a request from a school board for 200 computers. Using the full-cost criteria and desired level of return, which one of the following prices should be recommended to BCC's management for bidding purposes?

- a. \$874.00.
- b. \$882.00.
- c. \$961.40.
- d. \$1,026.30.

244. *CSO: 2C3a LOS: 2C3b*  
Companies that manufacture made-to-order industrial equipment typically use which one of the following?
- Cost-based pricing.
  - Market-based pricing.
  - Material-based pricing.
  - Price discrimination.
245. *CSO: 2C3a LOS: 2C3b*  
Which one of the following is **not** a characteristic of market-based costing?
- It has a customer-driven external focus.
  - It is used by companies facing stiff competition.
  - It is used by companies facing minimal competition.
  - It starts with a target selling price and target profit.
246. *CSO: 2C3a LOS: 2C3c*  
Almelo Manpower Inc. provides contracted bookkeeping services. Almelo has annual fixed costs of \$100,000 and variable costs of \$6 per hour. This year the company budgeted 50,000 hours of bookkeeping services. Almelo prices its services at full cost and uses a cost-plus pricing approach. The company developed a billing price of \$9 per hour. The company's mark-up level would be
- 12.5%.
  - 33.3%.
  - 50.0%.
  - 66.6%.
247. *CSO: 2C3b LOS: 2C3j*  
Fennel Products is using cost-based pricing to determine the selling price for its new product based on the following information.
- |                    |                    |
|--------------------|--------------------|
| Annual volume      | 25,000 units       |
| Fixed costs        | \$700,000 per year |
| Variable costs     | \$200 per unit     |
| Plant investment   | \$3,000,000        |
| Working capital    | \$1,000,000        |
| Effective tax rate | 40%                |
- The target price that Fennell needs to set for the new product to achieve a 15% after-tax return on investment (ROI) would be
- \$228.
  - \$238.
  - \$258.
  - \$268.

248. CSO: 2C3e LOS: 2C3f  
A monopoly will maximize profits if it produces an output where marginal cost is

- a. less than marginal revenue.
- b. greater than marginal revenue.
- c. equal to marginal revenue.
- d. equal to price.

249. CSO: 2C3e LOS: 2C3f  
At the long-run profit maximizing equilibrium of a firm in a perfectly competitive market, all of the following are correct **except** that

- a. price equals marginal cost.
- b. price equals average total cost.
- c. economic profits are positive.
- d. marginal cost equals marginal revenue.

#### Section D: Risk Management

250. CSO: 2D1b LOS: 2D1f  
A firm is constructing a risk analysis to quantify the exposure of its data center to various types of threats. Which one of the following situations would represent the highest annual loss exposure after adjustment for insurance proceeds?

	Frequency of Occurrence (years)	Loss Amount	Insurance (% coverage)
a.	1	\$ 15,000	85.
b.	8	75,000	80.
c.	20	200,000	80.
d.	100	400,000	50.

#### Section E: Investment Decisions

251. CSO: 2E1a LOS: 2E1a  
Capital investment projects include proposals for all of the following **except**

- a. the acquisition of government mandated pollution control equipment.
- b. the expansion of existing product offerings.
- c. additional research and development facilities.
- d. refinancing existing working capital agreements.

252. CSO: 2E1a LOS: 2E1a

Which one of the following items is **least** likely to directly impact an equipment replacement capital expenditure decision?

- a. The net present value of the equipment that is being replaced.
- b. The depreciation rate that will be used for tax purposes on the new asset.
- c. The amount of additional accounts receivable that will be generated from increased production and sales.
- d. The sales value of the asset that is being replaced.

253. CSO: 2E1a LOS: 2E1a

All of the following are methods used to evaluate investments for capital budgeting decisions **except**

- a. accounting rate of return.
- b. internal rate of return.
- c. excess present value (profitability) index.
- d. required rate of return.

254. CSO: 2E1b LOS: 2E1b

Cora Lewis is performing an analysis to determine if her firm should invest in new equipment to produce a product recently developed by her firm. The other option would be to abandon the product. She uses the net present value (NPV) method and discounts at the firm's cost of capital. Lewis is contemplating how to handle the following items.

- I. The book value of warehouse space currently used by another division.
- II. Interest payments on debt to finance the equipment.
- III. Increased levels of accounts payable and inventory.
- IV. R&D spent in prior years and treated as a deferred asset for book and tax purposes.

Which of the above items are relevant for Lewis to consider in determining the cash flows for her NPV calculation?

- a. I, II, III and IV.
- b. II and III only.
- c. III only.
- d. IV only.



255. CSO: 2E1b LOS: 2E1b

Wilcox Corporation won a settlement in a law suit and was offered four different payment alternatives by the defendant's insurance company. A review of interest rates indicates that 8% is appropriate for analyzing this situation. Ignoring any tax considerations, which one of the following four alternatives should the controller recommend to Wilcox management?

- a. \$135,000 now.
- b. \$40,000 per year at the end of each of the next four years.
- c. \$5,000 now and \$20,000 per year at the end of each of the next ten years.
- d. \$5,000 now and \$5,000 per year at the end of each of the next nine years, plus a lump-sum payment of \$200,000 at the end of the tenth year.

256. CSO: 2E1b LOS: 2E1b

Calvin Inc. is considering the purchase of a new state-of-art machine to replace its hand-operated machine. Calvin's effective tax rate is 40%, and its cost of capital is 12%. Data regarding the existing and new machines are presented below.

	Existing Machine	New Machine
Original cost	\$50,000	\$90,000
Installation costs	0	4,000
Freight and insurance	0	6,000
Expected end salvage value	0	0
Depreciation method	straight-line	straight-line
Expected useful life	10 years	5 years

The existing machine has been in service for seven years and could be sold currently for \$25,000. Calvin expects to realize a before-tax annual reduction in labor costs of \$30,000 if the new machine is purchased and placed in service.

If the new machine is purchased, the incremental cash flows for the fifth year would amount to

- a. \$18,000.
- b. \$24,000.
- c. \$26,000.
- d. \$30,000.

257. CSO: 2E1b LOS: 2E1b

Olson Industries needs to add a small plant to accommodate a special contract to supply building materials over a five year period. The required initial cash outlays at Time 0 are as follows.

Land	\$ 500,000
New building	2,000,000
Equipment	3,000,000

Olson uses straight-line depreciation for tax purposes and will depreciate the building over 10 years and the equipment over 5 years. Olson's effective tax rate is 40%.

Revenues from the special contract are estimated at \$1.2 million annually, and cash expenses are estimated at \$300,000 annually. At the end of the fifth year, the assumed sales values of the land and building are \$800,000 and \$500,000, respectively. It is further assumed the equipment will be removed at a cost of \$50,000 and sold for \$300,000.

As Olson utilizes the net present value (NPV) method to analyze investments, the net cash flow for period 3 would be

- a. \$60,000.
- b. \$860,000.
- c. \$880,000.
- d. \$940,000.

258. CSO: 2E1b LOS: 2E1b

The following schedule reflects the incremental costs and revenues for a capital project. The company uses straight-line depreciation. The interest expense reflects an allocation of interest on the amount of this investment, based on the company's weighted average cost of capital.

Revenues		\$650,000
Direct costs	\$270,000	
Variable overhead	50,000	
Fixed overhead	20,000	
Depreciation	70,000	
General & administrative	40,000	
Interest expense	<u>8,000</u>	
Total costs		<u>458,000</u>
Net profit before taxes		<u>\$192,000</u>

The annual cash flow from this investment, before tax considerations, would be

- a. \$192,000.
- b. \$200,000.
- c. \$262,000.
- d. \$270,000.

259. CSO: 2E1b LOS: 2E1b

Kell Inc. is analyzing an investment for a new product expected to have annual sales of 100,000 units for the next 5 years and then be discontinued. New equipment will be purchased for \$1,200,000 and cost \$300,000 to install. The equipment will be depreciated on a straight-line basis over 5 years for financial reporting purposes and 3 years for tax purposes. At the end of the fifth year, it will cost \$100,000 to remove the equipment, which can be sold for \$300,000. Additional working capital of \$400,000 will be required immediately and needed for the life of the product. The product will sell for \$80, with direct labor and material costs of \$65 per unit. Annual indirect costs will increase by \$500,000. Kell's effective tax rate is 40%.

In a capital budgeting analysis, what is the expected cash flow at time = 5 (fifth year of operations) that Kell should use to compute the net present value?

- a. \$720,000.
- b. \$800,000.
- c. \$1,120,000.
- d. \$1,240,000.

260. CSO: 2E1b LOS: 2E1b

Kell Inc. is analyzing an investment for a new product expected to have annual sales of 100,000 units for the next 5 years and then be discontinued. New equipment will be purchased for \$1,200,000 and cost \$300,000 to install. The equipment will be depreciated on a straight-line basis over 5 years for financial reporting purposes and 3 years for tax purposes. At the end of the fifth year, it will cost \$100,000 to remove the equipment, which can be sold for \$300,000. Additional working capital of \$400,000 will be required immediately and needed for the life of the product. The product will sell for \$80, with direct labor and material costs of \$65 per unit. Annual indirect costs will increase by \$500,000. Kell's effective tax rate is 40%.

In a capital budgeting analysis, what is the cash outflow at time 0 (initial investment) that Kell should use to compute the net present value?

- a. \$1,300,000.
- b. \$1,500,000.
- c. \$1,700,000.
- d. \$1,900,000.

261. CSO: 2E1b LOS: 2E1b

Colvern Corporation is considering the acquisition of a new computer-aided machine tool to replace an existing, outdated model. Relevant information includes the following.

Projected annual cash savings	\$28,400
Annual depreciation - new machine	16,000
Annual depreciation - old machine	1,600
Income tax rate	40%

Annual after-tax cash flows for the project would amount to

- a. \$5,600.
- b. \$7,440.
- c. \$17,040.
- d. \$22,800.

262. CSO: 2E1b LOS: 2E1b

Skytop Industries is analyzing a capital investment project using discounted cash flow (DCF) analysis. The new equipment will cost \$250,000. Installation and transportation costs aggregating \$25,000 will be capitalized. A five year MACRS depreciation schedule (20%, 32%, 19.2%, 11.52%, 11.52%, 5.76%) with the half-year convention will be employed. Existing equipment, with a book value of \$100,000 and an estimated market value of \$80,000, will be sold immediately after installation of the new equipment. Annual incremental pre-tax cash inflows are estimated at \$75,000. Skytop's effective income tax rate is 40%. After-tax cash flow for the first year of the project would amount to

- a. \$45,000.
- b. \$52,000.
- c. \$67,000.
- d. \$75,000.

263. CSO: 2E1b LOS: 2E1b

Skytop Industries is analyzing a capital investment project using discounted cash flow (DCF) analysis. The new equipment will cost \$250,000. Installation and transportation costs aggregating \$25,000 will be capitalized. Existing equipment will be sold immediately after installation of the new equipment. The existing equipment has a tax basis of \$100,000 and an estimated market value of \$80,000. Skytop estimates that the new equipment's capacity will generate additional receivables and inventory of \$30,000, while payables will increase by \$15,000. Annual incremental pre-tax cash inflows are estimated at \$75,000. Skytop's effective income tax rate is 40%. Total after-tax cash outflows occurring in Year 0 would be

- a. \$177,000.
- b. \$182,000.
- c. \$198,000.
- d. \$202,000.

264. CSO: 2E1b LOS: 2E1b

Mintz Corporation is considering the acquisition of a new technologically efficient packaging machine at a cost of \$300,000. The equipment requires an immediate, fully recoverable, investment in working capital of \$40,000. Mintz plans to use the machine for five years, is subject to a 40% income tax rate, and uses a 12% hurdle rate when analyzing capital investments. The company employs the net present value method (NPV) to analyze projects.

The overall impact of the working capital investment on Mintz’s NPV analysis is

- a. \$(10,392).
- b. \$(13,040).
- c. \$(17,320).
- d. \$(40,000).

265. CSO: 2E1b LOS: 2E1b

In estimating "after-tax incremental cash flows," under discounted cash flow analyses for capital project evaluations, which one of the following options reflects the items that should be included in the analyses?

	<u>Sunk Costs</u>	<u>Project related changes in net working capital</u>	<u>Estimated impacts of inflation</u>
a.	No	No	Yes
b.	No	Yes	Yes
c.	No	Yes	No
d.	Yes	No	No

266. CSO: 2E1b LOS: 2E1b

AGC Company is considering an equipment upgrade. AGC uses discounted cash flow (DCF) analysis in evaluating capital investments and has an effective tax rate of 40%. Selected data developed by AGC is as follows.

	Existing <u>Equipment</u>	New <u>Equipment</u>
Original cost	\$50,000	\$95,000
Accumulated depreciation	45,000	-
Current market value	3,000	95,000
Accounts receivable	6,000	8,000
Accounts payable	2,100	2,500

Based on this information, what is the initial investment for a DCF analysis of this proposed upgrade?

- a. \$92,400.
- b. \$92,800.
- c. \$95,800.
- d. \$96,200.

267. CSO: 2E1b LOS: 2E1b

Calvin Inc. is considering the purchase of a new state-of-art machine to replace its hand-operated machine. Calvin's effective tax rate is 40%, and its cost of capital is 12%. Data regarding the existing and new machines are presented below.

	Existing <u>Machine</u>	New <u>Machine</u>
Original cost	\$50,000	\$90,000
Installation cost	0	4,000
Freight and insurance	0	6,000
Expected end salvage value	0	0
Depreciation method	straight-line	straight-line
Expected useful life	10 years	5 years

The existing machine has been in service for seven years and could be sold currently for \$25,000. If the new machine is purchased Calvin expects to realize a \$30,000 before-tax annual reduction in labor costs.

If the new machine is purchased, what is the net amount of the initial cash outflow at Time 0 for net present value calculation purposes?

- a. \$65,000.
- b. \$75,000.
- c. \$79,000.
- d. \$100,000.

268. CSO: 2E1b LOS: 2E1b

Olson Industries needs to add a small plant to accommodate a special contract to supply building materials over a five year period. The required initial cash outlays at Time 0 are as follows.

Land	\$ 500,000
New building	2,000,000
Equipment	3,000,000

Olson uses straight-line depreciation for tax purposes and will depreciate the building over 10 years and the equipment over 5 years. Olson’s effective tax rate is 40%.

Revenues from the special contract are estimated at \$1.2 million annually and cash expenses are estimated at \$300,000 annually. At the end of the fifth year, the assumed sales values of the land and building are \$800,000 and \$500,000, respectively. It is further assumed the equipment will be removed at a cost of \$50,000 and sold for \$300,000.

As Olson utilizes the net present value (NPV) method to analyze investments, the net cash flow for period 5 would be`

- a. \$1,710,000.
- b. \$2,070,000.
- c. \$2,230,000.
- d. \$2,390,000.

269. CSO: 2E1b LOS: 2E1b

In discounted cash flow techniques, which one of the following alternatives **best** reflects the items to be incorporated in the initial net cash investment?

	Capitalized expenditures (e.g., shipping costs)	Changes in net working capital	Net proceeds from sale of old asset in a replacement decision	Impact of spontaneous changes in current liabilities
a.	No	Yes	Yes	Yes.
b.	Yes	No	No	No.
c.	No	Yes	No	No.
d.	Yes	Yes	Yes	Yes.



270. CSO: 2E1b LOS: 2E1b

Calvin Inc. is considering the purchase of a new state-of-art machine to replace its hand-operated machine. Calvin's effective tax rate is 40%, and its cost of capital is 12%. Data regarding the existing and new machines are presented below.

	Existing <u>Machine</u>	New <u>Machine</u>
Original cost	\$50,000	\$90,000
Installation costs	0	4,000
Freight and insurance	0	6,000
Expected end salvage value	0	0
Depreciation method	straight-line	straight-line
Expected useful life	10 years	5 years

The existing machine has been in service for five years and could be sold currently for \$25,000. Calvin expects to realize annual before-tax reductions in labor costs of \$30,000 if the new machine is purchased and placed in service.

If the new machine is purchased, the incremental cash flows for the first year would amount to

- \$18,000.
- \$24,000.
- \$30,000.
- \$45,000.

271. CSO: 2E1b LOS: 2E2E1c1f

The owner of Woofie's Video Rental cannot decide how to project the real costs of opening a rental store in a new shopping mall. The owner knows the capital investment required but is not sure of the returns from a store in a new mall. Historically, the video rental industry has had an inflation rate equal to the economic norm. The owner requires a real internal rate of return of 10%. Inflation is expected to be 3% during the next few years. The industry expects a new store to show a growth rate, without inflation, of 8%. First year revenues at the new store are expected to be \$400,000.

The revenues for the second year, using both the real rate approach and the nominal rate approach, respectively, would be

- \$432,000 real and \$444,960 nominal.
- \$432,000 real and \$452,000 nominal.
- \$440,000 real and \$452,000 nominal.
- \$440,000 real and \$453,200 nominal.

272. CSO: 2E1b LOS: 2E1b

Kell Inc. is analyzing an investment for a new product expected to have annual sales of 100,000 units for the next 5 years and then be discontinued. New equipment will be purchased for \$1,200,000 and cost \$300,000 to install. The equipment will be depreciated on a straight-line basis over 5 years for financial reporting purposes and 3 years for tax purposes. At the end of the fifth year, it will cost \$100,000 to remove the equipment, which can be sold for \$300,000. Additional working capital of \$400,000 will be required immediately and needed for the life of the product. The product will sell for \$80, with direct labor and material costs of \$65 per unit. Annual indirect costs will increase by \$500,000. Kell's effective tax rate is 40%.

In a capital budgeting analysis, what is the expected cash flow at time = 3 (3rd year of operation) that Kell should use to compute the net present value?

- a. \$300,000.
- b. \$720,000.
- c. \$760,000.
- d. \$800,000.

273. CSO: 2E1c LOS: 2E1c

Sarah Birdsong has prepared a net present value (NPV) analysis for a 15-year equipment modernization program. Her initial calculations include a series of depreciation tax savings, which are then discounted. Birdsong is now considering the incorporation of inflation into the NPV analysis. If the depreciation tax savings were based on original equipment cost, which of the following options correctly shows how she should handle the program's cash operating costs and the firm's required rate return, respectively?

- |    | <u>Cash Operating Costs</u> | <u>Required Rate of Return</u> |
|----|-----------------------------|--------------------------------|
| a. | Adjust for inflation        | Adjust for inflation.          |
| b. | Adjust for inflation        | Do not adjust for inflation.   |
| c. | Do not adjust for inflation | Adjust for inflation.          |
| d. | Do not adjust for inflation | Do not adjust for inflation.   |

274. CSO: 2E1c LOS: 2E1c

Regis Company, which is subject to an effective income tax rate of 30%, is evaluating a proposed capital project. Relevant information for the proposed project is summarized below.

Initial investment	\$500,000
Annual operating cash inflows for the first three years.	
Year 1	185,000
Year 2	175,000
Year 3	152,000

Depreciation will be calculated under the straight-line method using an 8-year estimated service life and a terminal value of \$50,000. In determining the estimated total after-tax cash flow in Year 2 of the project, Regis should consider the after-tax operating cash

- a. inflow only.
- b. inflow plus annual depreciation expense.
- c. inflow plus annual depreciation tax shield.
- d. inflow plus the net impact of the annual depreciation expense and depreciation tax shield.

274. CSO: 2E1c LOS: 2E1c

For each of the next six years Atlantic Motors anticipates net income of \$10,000, straight-line tax depreciation of \$20,000, a 40% tax rate, a discount rate of 10%, and cash sales of \$100,000. The depreciable assets are all being acquired at the beginning of year 1 and will have a salvage value of zero at the end of six years.

The present value of the total depreciation tax savings would be

- a. \$8,000.
- b. \$27,072.
- c. \$34,840.
- d. \$87,100.

276. CSO: 2E1c LOS: 2E1c

Webster Products is performing a capital budgeting analysis on a new product it is considering. Annual sales are expected to be 50,000 units in the first year, 100,000 units in the second year, and 125,000 units the year thereafter. Selling price will be \$80 in the first year and is expected to decrease by 5% per year. Annual costs are forecasted as follows.

Fixed costs	\$300,000 each year
Labor cost per unit	\$20 in year 1, increasing 5% per year, thereafter
Material cost per unit	\$30 in year 1, increasing 10% per year, thereafter

The investment of \$2 million will be depreciated on a straight-line basis over 4 years for financial reporting and tax purposes. Webster's effective tax rate is 40%. When calculating net present value (NPV), the net cash flow for year 3 would be

- a. \$558,750.
- b. \$858,750.
- c. \$1,058,750.
- d. \$1,070,000.

277. CSO: 2E1c LOS: 2E1c

Skytop Industries is analyzing a capital investment project using discounted cash flow (DCF) analysis. The new equipment will cost \$250,000. Installation and transportation costs aggregating \$25,000 will be capitalized. The appropriate five year depreciation schedule (20%, 32%, 19%, 14.5%, 14.5%) will be employed with no terminal value factored into the computations. Annual incremental pre-tax cash inflows are estimated at \$75,000. Skytop's effective income tax rate is 40%. Assuming the machine is sold at the end of Year 5 for \$30,000, the after-tax cash flow for Year 5 of the project would amount to

- a. \$63,950.
- b. \$72,950.
- c. \$78,950.
- d. \$86,925.

278. CSO: 2E1c LOS: 2E1c

Fuller Industries is considering a \$1 million investment in stamping equipment to produce a new product. The equipment is expected to last nine years, produce revenue of \$700,000 per year, and have related cash expenses of \$450,000 per year. At the end of the 9th year, the equipment is expected to have a salvage value of \$100,000 and cost \$50,000 to remove. The IRS categorizes this as 5-year Modified Accelerated Cost Recovery System (MACRS) property subject to the following depreciation rates.

<u>Year</u>	<u>Rate</u>
1	20.00%
2	32.00%
3	19.20%
4	11.52%
5	11.52%
6	5.76%

Fuller's effective income tax rate is 40% and Fuller expects, on an overall company basis, to continue to be profitable and have significant taxable income. If Fuller uses the net present value method to analyze investments, what is the expected net tax impact on cash flow in Year 2 before discounting?

- a. Tax benefit of \$28,000.
- b. \$0.
- c. Negative \$100,000.
- d. Negative \$128,000.

279. CSO: 2E2a LOS: 2E2a

The net present value of an investment project represents the

- a. total actual cash inflows minus the total actual cash outflows.
- b. excess of the discounted cash inflows over the discounted cash outflows.
- c. total after-tax cash flow including the tax shield from depreciation.
- d. cumulative accounting profit over the life of the project.

280. CSO: 2E2a LOS: 2E2b

Kunkle Products is analyzing whether or not to invest in equipment to manufacture a new product. The equipment will cost \$1 million, is expected to last 10 years, and will be depreciated on a straight-line basis for both financial reporting and tax purposes. Kunkle's effective tax rate is 40%, and its hurdle rate is 14%. Other information concerning the project is as follows.

Sales per year = 10,000 units  
Selling price = \$100 per unit  
Variable cost = \$70 per unit

A 10% reduction in variable costs would result in the net present value increasing by approximately

- a. \$156,000.
- b. \$219,000.
- c. \$365,000.
- d. \$367,000.

281. CSO: 2E2a LOS: 2E2b

Allstar Company invests in a project with expected cash inflows of \$9,000 per year for four years. All cash flows occur at year-end. The required return on investment is 9%. If the project generates a net present value (NPV) of \$3,000, what is the amount of the initial investment in the project?

- a. \$11,253.
- b. \$13,236.
- c. \$26,160.
- d. \$29,160.

282. CSO: 2E2a LOS: 2E2b

Smithco is considering the acquisition of scanning equipment to mechanize its procurement process. The equipment will require extensive testing and debugging, as well as user training prior to its operational use. Projected after-tax cash flows are shown below.

<u>Time Period</u> <u>Year</u>	<u>After-Tax Cash</u> <u>Inflow/(Outflow)</u>
0	\$(550,000)
1	\$(500,000)
2	\$450,000
3	\$350,000
4	\$350,000
5	\$350,000

Management anticipates the equipment will be sold at the beginning of year 6 for \$50,000 when its book value is zero. Smithco's internal hurdle and effective tax rates are 14% and 40%, respectively. The project's net present value would be

- a. \$(1,780).
- b. \$(6,970).
- c. \$(17,350).
- d. \$8,600.

283. CSO: 2E2a LOS: 2E2a

An investment decision is acceptable if the

- a. net present value is greater than or equal to \$0.
- b. present value of cash inflows is less than the present value of cash outflows.
- c. present value of cash outflows is greater than or equal to \$0.
- d. present value of cash inflows is greater than or equal to \$0.

284. CSO: 2E2a LOS: 2E2b

Verla Industries is trying to decide which one of the following two options to pursue. Either option will take effect on January 1st of the next year.

Option One - Acquire a New Finishing Machine.

The cost of the machine is \$1,000,000 and will have a useful life of five years. Net pre-tax cash flows arising from savings in labor costs will amount to \$100,000 per year for five years.

Depreciation expense will be calculated using the straight-line method for both financial and tax reporting purposes. As an incentive to purchase, Verla will receive a trade-in allowance of \$50,000 on their current fully depreciated finishing machine.

Option Two - Outsource the Finishing Work.

Verla can outsource the work to LM Inc. at a cost of \$200,000 per year for five years. If they outsource, Verla will scrap their current fully depreciated finishing machine.

Verla's effective income tax rate is 40%. The weighted-average cost of capital is 10%.

The net present value of outsourcing the finishing work is

- a. \$303,280 net cash outflow.
- b. \$404,920 net cash outflow.
- c. \$454,920 net cash outflow.
- d. \$758,200 net cash outflow.

285. CSO: 2E2a LOS: 2E2b

Long Inc. is analyzing a \$1 million investment in new equipment to produce a product with a \$5 per unit margin. The equipment will last 5 years, be depreciated on a straight-line basis for tax purposes, and have no value at the end of its life. A study of unit sales produced the following data.

<u>Annual Unit Sales</u>	<u>Probability</u>
80,000	.10
85,000	.20
90,000	.30
95,000	.20
100,000	.10
110,000	.10

If Long utilizes a 12% hurdle rate and is subject to a 40% effective income tax rate, the expected net present value of the project would be

- a. \$261,750.
- b. \$283,380.
- c. \$297,800.
- d. \$427,580.



286. CSO: 2E2a LOS: 2E2b

Fred Kratz just completed a capital investment analysis for the acquisition of new material handling equipment. The equipment is expected to cost \$1,000,000 and be used for eight years. Kratz reviewed the net present value (NPV) analysis with Bill Dolan, Vice President of Finance. The analysis shows that the tax shield for this investment has a positive NPV of \$200,000, using the firm's hurdle rate of 20%. Dolan noticed that 8 year straight-line depreciation was used for tax purposes but, since this equipment qualifies for 3-year MACRS treatment, the tax shield analysis should be revised. The company has an effective tax rate of 40%. The MACRS rates for 3-year property are as follows.

<u>Year</u>	<u>Rate</u>
1	33.33%
2	44.45%
3	14.81%
4	7.41%

Accordingly, the revised NPV for the tax shield (rounded to the nearest thousand) should be

- a. \$109,000.
- b. \$192,000.
- c. \$283,000.
- d. \$425,000.

287. CSO: 2E2a LOS: 2E2c

Dobson Corp. is analyzing a capital investment requiring a cash outflow at Time 0 of \$2.5 million and net cash inflows of \$800,000 per year for 5 years. The net present value (NPV) was calculated to be \$384,000 at a 12% discount rate. Since several managers felt this was a risky project, three separate scenarios were analyzed, as follows.

- Scenario R - The annual cash inflows were reduced by 10%.
- Scenario S - The discount rate was changed to 18%.
- Scenario T - The cash inflow in year 5 was reduced to zero.

Rank the three individual scenarios in the order of the effect on NPV, from least effect to greatest effect.

- a. R, S, T.
- b. R, T, S.
- c. S, T, R.
- d. T, S, R.

288. CSO: 2E2a LOS: 2E2g

Ironside Products is considering two independent projects, each requiring a cash outlay of \$500,000 and having an expected life of 10 years. The forecasted annual net cash inflows for each project and the probability distributions for these cash inflows are as follows.

Project R		Project S	
<u>Probabilities</u>	<u>Cash Inflows</u>	<u>Probabilities</u>	<u>Cash Inflows</u>
0.10	\$ 75,000	0.25	\$ 70,000
0.80	95,000	0.50	110,000
0.10	115,000	0.25	150,000

Ironside has decided that the project with the greatest relative risk should meet a hurdle rate of 16% and the project with less risk should meet a hurdle rate of 12%. Given these parameters, which of the following actions should be recommended for Ironside to undertake?

- Reject both projects.
- Accept Project R and reject Project S.
- Reject Project R and accept Project S.
- Accept both projects.

289. CSO: 2E2a LOS: 2E2g

Logan Enterprises is at a critical decision point and must decide whether to go out of business or continue to operate for five more years. Logan has a labor contract with five years remaining which calls for \$1.5 million in severance pay if Logan's plant shuts down. The firm also has a contract to supply 150,000 units per year, at a price of \$100 each, to Dill Inc. for the next five years. Dill is Logan's only remaining customer. Logan must pay Dill \$500,000 immediately if it defaults on the contract. The plant has a net book value of \$600,000, and appraisers estimate the facility would sell for \$750,000 today but would have no market value if operated for another five years. Logan's fixed costs are \$4 million per year, and variable costs are \$75 per unit. Logan's appropriate discount rate is 12%. Ignoring taxes, the optimal decision is to

- shut down because the annual cash flow is negative \$250,000 per year.
- keep operating to avoid the severance pay of \$1,500,000.
- shut down since the breakeven point is 160,000 units while annual sales are 150,000 units.
- keep operating since the incremental net present value is approximately \$350,000.

290. CSO: 2E2a LOS: 2E2b

Foster Manufacturing is analyzing a capital investment project that is forecasted to produce the following cash flows and net income.

<u>Years</u>	<u>After-Tax Cash Flows</u>	<u>Net Income</u>
0	\$(20,000)	\$ 0
1	6,000	2,000
2	6,000	2,000
3	8,000	2,000
4	8,000	2,000

If Foster's cost of capital is 12%, the net present value for this project is

- a. \$(1,600).
- b. \$924.
- c. \$6,074.
- d. \$6,998.

291. CSO: 2E2a LOS: 2E2b

Lunar Inc. is considering the purchase of a machine for \$500,000 which will last 5 years. A financial analysis is being developed using the following information.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Unit sales	<u>10,000</u>	<u>10,000</u>	<u>20,000</u>	<u>20,000</u>	<u>20,000</u>
Selling price per unit	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100
Variable cost per unit	65	65	65	65	65
Fixed costs	300,000	300,000	300,000	300,000	300,000
Pre-tax cash flow	50,000	50,000	400,000	400,000	400,000

The machine will be depreciated over 5 years on a straight-line basis for tax purposes and Lunar is subject to a 40% effective income tax rate. Assuming Lunar will have significant taxable income from other lines of business, and using a 20% discount rate, the net present value of the project would be

- a. \$(282,470).
- b. \$(103,070).
- c. \$(14,010).
- d. \$16,530.

292. CSO: 2E2a LOS: 2E2b

Parker Industries is analyzing a \$200,000 equipment investment to produce a new product for the next 5 years. A study of expected annual after-tax cash flows from the project produced the following data.

<u>Annual After-Tax Cash Flow</u>	<u>Probability</u>
\$45,000	.10
50,000	.20
55,000	.30
60,000	.20
65,000	.10
70,000	.10

If Parker utilizes a 14% hurdle rate, the probability of achieving a positive net present value is

- a. 20%.
- b. 30%.
- c. 40%.
- d. 60%.

293. CSO: 2E2a LOS: 2E2g

Staten Corporation is considering two mutually exclusive projects. Both require an initial outlay of \$150,000 and will operate for five years. The cash flows associated with these projects are as follows.

<u>Year</u>	<u>Project X</u>	<u>Project Y</u>
1	\$ 47,000	\$ 0
2	47,000	0
3	47,000	0
4	47,000	0
5	47,000	280,000
Total	<u>\$235,000</u>	<u>\$280,000</u>

Staten's required rate of return is 10 percent. Using the net present value method, which one of the following actions would you recommend to Staten?

- a. Accept Project X, and reject Project Y.
- b. Accept Project Y, and reject Project X.
- c. Accept Projects X and Y.
- d. Reject Projects X and Y.

294. CSO: 2E2a LOS: 2E2b

Verla Industries is trying to decide which one of the following two options to pursue. Either option will take effect on January 1st of the next year.

Option One - Acquire a New Finishing Machine.

The cost of the machine is \$1,000,000 and will have a useful life of five years. Net pre-tax cash flows arising from savings in labor costs will amount to \$100,000 per year for five years.

Depreciation expense will be calculated using the straight-line method for both financial and tax reporting purposes. As an incentive to purchase, Verla will receive a trade-in allowance of \$50,000 on their current fully depreciated finishing machine.

Option Two - Outsource the Finishing Work.

Verla can outsource the work to LM Inc. at a cost of \$200,000 per year for five years. If they outsource, Verla will scrap their current fully depreciated finishing machine.

Verla's effective income tax rate is 40%. The weighted-average cost of capital is 10%.

The net present value of acquiring the new finishing machine is

- a. \$229,710 net cash outflow.
- b. \$267,620 net cash outflow.
- c. \$369,260 net cash outflow.
- d. \$434,424 net cash outflow.

295. CSO: 2E2a LOS: 2E2g

Stennet Company is considering two mutually exclusive projects. The company's cost of capital is 10%. The net present value (NPV) profiles of the two projects are as follows.

<u>Discount Rate</u>	<u>Net Present Value \$(000)</u>	
<u>(percent)</u>	<u>Project A</u>	<u>Project B</u>
0	\$2,220	\$1,240
10	681	507
12	495	411
14	335	327
16	197	252
18	77	186
20	(26)	128
22	(115)	76
24	(193)	30
26	(260)	(11)
28	(318)	(47)

The company president is of the view that Project B should be accepted because it has the higher internal rate of return (IRR). The president requested John Mack, the CFO, to make a recommendation. Which one of the following options should Mack recommend to the president?

- Agree with the president.
- Accept Project A because it has an IRR higher than that of Project B.
- Accept both Projects A and B as the IRR for each project is greater than cost of capital.
- Accept Project A because at a 10% discount rate it has an NPV that is greater than that of Project B.

296. CSO: 2E2a LOS: 2E2g

Winston Corporation is subject to a 30% effective income tax rate and uses the net present value method to evaluate capital budgeting proposals. Harry Ralston, the capital budget manager, desires to improve the appeal of a marginally attractive proposal. To accomplish his goal, which one of the following actions should be recommended to Ralston?

- Postpone a fully-deductible major overhaul from year 4 to year 5.
- Decrease the project's estimated terminal salvage value.
- Immediately pay the proposal's marketing program in its entirety rather than pay in five equal installments.
- Adjust the project's discount rate to reflect movement of the project from a "low risk" category to an "average risk" category.

297. CSO: 2E2b LOS: 2E2d

Which of the following is **not** a shortcoming of the Internal Rate of Return (IRR) method?

- a. IRR assumes that funds generated from a project will be reinvested at an interest rate equal to the project's IRR.
- b. IRR does not take into account the difference in the scale of investment alternatives.
- c. IRR is easier to visualize and interpret than net present value (NPV).
- d. Sign changes in the cash flow stream can generate more than one IRR.

298. CSO: 2E2b LOS: 2E2a

A company is in the process of evaluating a major product line expansion. Using a 14% discount rate, the firm has calculated the present value of both the project's cash inflows and cash outflows to be \$15.8 million. The company will likely evaluate this project further by

- a. taking a closer look at the expansion's contribution margin.
- b. comparing the internal rate of return versus the accounting rate of return.
- c. comparing the internal rate of return versus the company's cost of capital.
- d. comparing the internal rate of return versus the company's cost of capital and hurdle rate.

299. CSO: 2E2b LOS: 2E2g

Hobart Corporation evaluates capital projects using a variety of performance screens; including a hurdle rate of 16%, payback period of 3 years or less, and an accounting rate of return of 20% or more. Management is completing review of a project on the basis of the following projections.

- Capital investment                      \$200,000
- Annual cash flows                      \$74,000
- Straight-line depreciation              5 years
- Terminal value                          \$20,000

The projected internal rate of return is 20%. Which one of the following alternatives reflects the appropriate conclusions for the indicated evaluative measures?

- |    | <u>Internal Rate<br/>of Return</u> | <u>Payback</u> |
|----|------------------------------------|----------------|
| a. | Accept                             | Reject.        |
| b. | Reject                             | Reject.        |
| c. | Accept                             | Accept.        |
| d. | Reject                             | Accept.        |

300. CSO: 2E2b LOS: 2E2g

Diane Harper, Vice President of Finance for BGN Industries, is reviewing material prepared by her staff prior to the board of directors meeting at which she must recommend one of four mutually exclusive options for a new product line. The summary information below indicates the initial investment required, the present value of cash inflows (excluding the initial investment) at BGN's hurdle rate of 16%, and the internal rate of return (IRR) for each of the four options.

<u>Option</u>	<u>Investment</u>	<u>Present Value of Cash Inflows at 16%</u>	<u>IRR</u>
X	\$3,950,000	\$3,800,000	15.5%
Y	3,000,000	3,750,000	19.0%
Z	2,000,000	2,825,000	17.5%
W	800,000	1,100,000	18.0%

If there are no capital rationing constraints, which option should Harper recommend?

- a. Option X.
- b. Option Y.
- c. Option Z.
- d. Option W.

301. CSO: 2E2b LOS: 2E2a

If the present value of expected cash inflows from a project equals the present value of expected cash outflows, the discount rate is the

- a. payback rate.
- b. internal rate of return.
- c. accounting rate of return.
- d. net present value rate.



302. CSO: 2E2b LOS: 2E2b

The net present value profiles of projects A and B are as follows.

<u>Discount Rate</u> (percent)	<u>Net Present Value \$(000)</u>	
	<u>Project A</u>	<u>Project B</u>
0	\$2,220	\$1,240
10	681	507
12	495	411
14	335	327
16	197	252
18	77	186
20	(26)	128
22	(115)	76
24	(193)	30
26	(260)	(11)
28	(318)	(47)

The approximate internal rates of return for Projects A and B, respectively, are

- a. 0% and 0%.
- b. 19.0% and 21.5%.
- c. 19.5% and 25.5%.
- d. 20.5% and 26.5%.

303. CSO: 2E2b LOS: 2E2a

For a given investment project, the interest rate at which the present value of the cash inflows equals the present value of the cash outflows is called the

- a. hurdle rate.
- b. payback rate.
- c. internal rate of return.
- d. cost of capital.

304. CSO: 2E2b LOS: 2E2b

Two mutually exclusive capital expenditure projects have the following characteristics.

		<u>Project A</u>	<u>Project B</u>
Investment		\$100,000	\$150,000
Net cash inflow -	Year 1	40,000	80,000
	Year 2	50,000	70,000
	Year 3	60,000	60,000

All cash flows are received at the end of the year. Based on this information, which one of the following statements is **not** correct?

- a. The net present value of Project A at a cost of capital of 10% is \$22,720.
- b. The net present value of Project B at a cost of capital of 12% is \$19,950.
- c. The internal rate of return of Project B is greater than the internal rate of return of Project A.
- d. The payback years for Project A is greater than the payback years for Project B.

305. CSO: 2E2b LOS: 2E2b

Jenson Copying Company is planning to buy a copying machine costing \$25,310. The net present values (NPV) of this investment, at various discount rates, are as follows.

<u>Discount Rate</u>	<u>NPV</u>
4%	\$2,440
6%	\$1,420
8%	\$ 460
10%	(\$ 440)

Jenson's approximate internal rate of return on this investment is

- a. 6%.
- b. 8%.
- c. 9%.
- d. 10%.

306. CSO: 2E2b LOS: 2E2b

Foster Manufacturing is analyzing a capital investment project that is forecasted to produce the following cash flows and net income.

<u>Year</u>	<u>After Tax Cash-Flows</u>	<u>Net Income</u>
0	\$(20,000)	\$ 0
1	6,000	2,000
2	6,000	2,000
3	8,000	2,000
4	8,000	2,000

The internal rate of return (rounded to the nearest whole percentage) is

- a. 5%.
- b. 12%.
- c. 14%.
- d. 40%.

307. CSO: 2E2c LOS: 2E2a

The following methods are used to evaluate capital investment projects.

- Internal rate of return
- Average rate of return
- Payback
- Net present value

Which one of the following correctly identifies the methods that utilize discounted cash-flow (DCF) techniques?

	<u>Internal Rate of Return</u>	<u>Average Rate of Return</u>	<u>Payback</u>	<u>Net Present Value</u>
a.	Yes	Yes	No	No.
b.	No	No	Yes	Yes.
c.	Yes	No	Yes	No.
d.	Yes	No	No	Yes.

308. CSO: 2E2c LOS: 2E2c

Molar Inc. is evaluating three independent projects for the expansion of different product lines. The Finance Department has performed an extensive analysis of each project and the chief financial officer has indicated that there is no capital rationing in effect. Which of the following statements are correct?

- I. Reject any project with a payback period which is shorter than the company standard.
  - II. The project with the highest internal rate of return (IRR) exceeding the hurdle rate should be selected and the others rejected.
  - III. All projects with positive net present values should be selected.
  - IV. Molar should reject any projects with negative IRRs.
- a. I, II and IV only.
  - b. I, II, III and IV.
  - c. II and III only.
  - d. III and IV only.

309. CSO: 2E2c LOS: 2E2c

Jones & Company is considering the acquisition of scanning equipment to mechanize its procurement process. The equipment will require extensive testing and debugging as well as user training prior to its operational use. Projected after-tax cash flows are as follows.

Time Period	After-Tax Cash
<u>Year</u>	<u>Inflow/(Outflow)</u>
0	\$(600,000)
1	(500,000)
2	450,000
3	450,000
4	350,000
5	250,000

Management anticipates the equipment will be sold at the beginning of Year 6 for \$50,000 and its book value will be zero. Jones' internal hurdle and effective income tax rates are 14% and 40%, respectively. Based on this information, a negative net present value was computed for the project. Accordingly, it can be concluded that

- a. the project has an internal rate of return (IRR) less than 14% since IRR is the interest rate at which net present value is equal to zero.
- b. Jones should examine the determinants of its hurdle rate further before analyzing any other potential projects.
- c. Jones should calculate the project payback to determine if it is consistent with the net present value calculation.
- d. the project has an IRR greater than 14% since IRR is the interest rate at which net present value is equal to zero.

310. CSO: 2E3a LOS: 2E3a

Foggy Products is evaluating two mutually exclusive projects, one requiring a \$4 million initial outlay and the other a \$6 million outlay. The Finance Department has performed an extensive analysis of each project. The chief financial officer has indicated that there is no capital rationing in effect. Which of the following statements are correct?

- I. Both projects should be rejected if their payback periods are longer than the company standard.
- II. The project with the highest Internal Rate of Return (IRR) should be selected (assuming both IRRs exceed the hurdle rate).
- III. The project with the highest positive net present value should be selected.
- IV. Select the project with the smaller initial investment, regardless of which evaluation method is used.

- a. I, II, and IV only.
- b. I, II and III only.
- c. I and III only.
- d. II and III only.

311. CSO: 2E3a LOS: 2E3a

Despite its shortcomings, the traditional payback period continues to be a popular method to evaluate investments because, in part, it

- a. provides some insight into the risk associated with a project.
- b. ignores the time value of money.
- c. focuses on income rather than cash flow.
- d. furnishes information about an investment's lifetime performance.

312. CSO: 2E3a LOS: 2E3b

Which one of the following is **not** a shortcoming of the payback method?

- a. It offers no consideration of cash flows beyond the expiration of the payback period.
- b. It ignores the time value of money.
- c. It offers no indication of a project's liquidity.
- d. It encourages establishing a short payback period.

313. CSO: 2E3a LOS: 2E3c

Quint Company uses the payback method as part of its analysis of capital investments. One of its projects requires a \$140,000 investment and has the following projected before-tax cash flows.

Year 1	\$60,000
Year 2	60,000
Year 3	60,000
Year 4	80,000
Year 5	80,000

Quint has an effective 40% tax rate. Based on these data, the after-tax payback period is

- a. 1.5.
- b. 2.3.
- c. 3.4.
- d. 3.7.

314. CSO: 2E3a LOS: 2E3c

Foster Manufacturing is analyzing a capital investment project that is forecasted to produce the following cash flows and net income.

<u>Year</u>	<u>After-Tax Cash flow</u>	<u>Net Income</u>
0	(\$20,000)	\$ 0
1	6,000	2,000
2	6,000	2,000
3	8,000	2,000
4	8,000	2,000

The payback period of this project will be

- a. 2.5 years.
- b. 2.6 years.
- c. 3.0 years.
- d. 3.3 years.

315. CSO: 2E3a LOS: 2E3c

Smithco is considering the acquisition of scanning equipment to mechanize its procurement process. The equipment will require extensive testing and debugging, as well as user training prior to its operational use. Projected after-tax cash flows are shown below.

Time Period Year	After-Tax Cash Inflow/(Outflow)
0	\$(550,000)
1	\$(500,000)
2	\$450,000
3	\$350,000
4	\$250,000
5	\$150,000

Management anticipates the equipment will be sold at the beginning of year 6 for \$50,000 when its book value is zero. Smithco's internal hurdle and effective tax rates are 14% and 40%, respectively. The project's payback period will be

- a. 2.3 years.
- b. 3.0 years.
- c. 3.5 years.
- d. 4.0 years.

316. CSO: 2E4a LOS: 2E4b

Susan Hines has developed an estimate of the earnings per share for her firm for the next year using the following parameters.

Sales	\$20 million
Cost of goods sold	70% of sales
General & administrative expenses	\$300,000
Selling expense	\$100,000 plus 10% of sales
Debt outstanding	\$5 million @ 8% interest rate
Effective tax rate	35%
Common shares outstanding	2 million

She is now interested in the sensitivity of earnings per share to sales forecast changes. A 10% sales increase would increase earnings per share by

- a. 7.0 cents per share.
- b. 10.4 cents per share.
- c. 13.0 cents per share.
- d. 20.0 cents per share.

317. CSO: 2E4a LOS: 2E4b

The modeling technique that should be used in a complex situation involving uncertainty is a(n)

- a. expected value analysis.
- b. program evaluation review technique.
- c. Monte Carlo simulation.
- d. Markov process.

318. CSO: 2E4a LOS: 2E4b

Janet Jones, an analyst with All Purpose Heater Company, plans to use a Monte Carlo experiment to estimate the simulated daily demand for All Purpose's heaters. The probability distribution for the daily demand for heaters is as follows.

<u>Daily demand for heaters</u>	<u>Probability</u>	<u>Random number intervals</u>
0	.10	00-09
1	.15	10-24
2	.20	25-44
3	.20	45-64
4	.25	
5	.10	

Jones is trying to assign random number intervals for each of the demand levels. She has done so for the first four levels. If a total of 100 two-digit numbers are used in a simulation, what random number intervals should Jones assign to the 4 and 5 heaters demand levels, respectively?

- a. 65-69; 70-88.
- b. 65-84; 85-99.
- c. 65-84; 85-99.
- d. 65-89; 90-99.

319. CSO: 2E4a LOS: 2E4b

All of the following are advantages of a simulation model **except** that it

- a. allows what-if type of questions.
- b. does not interfere with the real world systems.
- c. generates optimal solutions to problems.
- d. allows the study of the interactive effect of variables.



320. CSO: 2E4a LOS: 2E4b

Logan Corporation, located in Boston, has experienced major distribution problems in supplying key Los Angeles-based customers. Delivery times have been as follows over the last four months.

<u>Delivery Time in Days</u>	<u>Number of Times Occurring</u>
5	12
6	18
7	15
8	9
9	6

The company's marketing manager wants to simulate the distribution process by assigning random numbers to delivery times and to other random variables. If the marketing manager uses 100 different random numbers to simulate the process, an appropriate assignment of random numbers to a 6-day delivery time would be

- a. 09-14.
- b. 30-60.
- c. 45-74.
- d. 00-18.

#### Section F: Professional Ethics

321. CSO: 2F1a LOS: 2F1c

Recently Fan Club Inc. submitted a budget for the coming year to management. Included in the budget were the plans for a new product, a rechargeable fan. The new fan will not only last longer than the competitor's product but is also more quiet. While not yet approved, the budget called for aggressive advertising to support its sales targets, as the business community was not yet aware that Fan Club was close to production of a new fan. A member of the management accounting staff "shared" the budget with a distributor. In accordance with IMA's "Statement of Ethical Professional Practice," which one of the following would **best** represent an ethical conflict in this situation?

- a. The budget has not been approved and therefore is not for publication.
- b. The price has not been established, so expectations must be managed.
- c. The staff member exposed the company to a potential lawsuit.
- d. The employee should refrain from disclosing confidential information.

## CMA Part 2 – Financial Decision Making

### Answers to Examination Questions for Practice

#### Section A: Financial Statement Analysis

1. Correct answer a. Gordon's common-size gross profit percentage has decreased as a result of an increasing common-size trend in cost of goods sold as shown below.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Sales	100%	100%	100%	100%
Cost of goods sold (÷ Sales)	60.0%	60.3%	60.7%	60.7%
Gross profit (÷ Sales)	40.0%	39.6%	39.2%	39.2%

2. Correct answer a. Broomall's working capital is \$40,000 calculated as follows.

$$\begin{array}{rcl}
 \text{Current assets} - \text{Current liabilities} & = & \text{Net working capital} \\
 \$10,000 + \$20,000 + \$8,000 + \$30,000 + \$12,000 & = & \$80,000 \text{ current assets} \\
 \qquad \qquad \qquad \$15,000 + \$25,000 & = & \$40,000 \text{ current liabilities} \\
 \qquad \qquad \qquad \$80,000 - \$40,000 & = & \underline{\$40,000} \text{ net working capital}
 \end{array}$$

3. Correct answer b. When merchandise is purchased on credit, accounts payable increases and inventory increases by the same amount so net working capital remains unchanged.
4. Correct answer c. If \$100,000 is used to purchase inventory, the firm's quick ratio will decrease. Since inventory is not included in the calculation of current assets for the quick ratio, current assets will decrease while liabilities remain unchanged.
5. Correct answer d. Grimaldi's quick ratio at the end of the year is 1.52 as shown below.

$$\begin{array}{rcl}
 (\text{Current assets} - \text{Inventory}) \div \text{Current liabilities} & = & \text{Quick ratio} \\
 (\$62,000 + \$35,000 + \$47,000) \div (\$84,000 + \$11,000) & = & \underline{1.52}
 \end{array}$$

6. Correct answer c. Davis' current ratio will be lower than 2.3 times as shown below.

$$\begin{array}{rcl}
 \text{Before purchase:} & \$7,500,000 \div X & = 2.3 \\
 & X & = \$3,260,870 \\
 \text{After purchase: } (\$7,500,000 + \$750,000) \div (\$3,260,870 + \$750,000) & = & \underline{2.05}
 \end{array}$$

7. Correct answer d. Markowitz's current ratio will be reduced as an increase in the allowance for uncollectible accounts will reduce total current assets while current liabilities remain unchanged.
8. Correct answer b. Fortune's net working capital is \$45,000 as shown below.

$$(\$10,000 + \$60,000 + \$25,000 + \$5,000) - (\$40,000 + \$10,000 + \$5,000) = \underline{\$45,000}$$

9. Correct answer b. To increase its acid test ratio, Gratska should sell auto parts on account. This transaction will increase accounts receivable and thus the numerator of the ratio. Inventory is not included in the ratio so the change in inventory will not affect the ratio.
10. Correct answer c. The purchase will adversely affect the quick ratio by reducing the cash balance. Since inventory is not included in the quick ratio, the change in inventory will not offset the reduction in cash.
11. Correct answer d. Boyd's current ratio is 2.97 as calculated below.
- $$\begin{array}{lcl} \text{Current assets} \div \text{Current liabilities} & = & \text{Current ratio} \\ (\$62,000 + \$47,000 + \$35,000 + \$138,000) \div (\$84,000 + \$11,000) & = & \underline{2.97} \end{array}$$
12. Correct answer d. A comparison of current assets with current liabilities gives an indication of the short-term debt-paying ability of a firm. Both working capital and the current ratio compare current assets with current liabilities and, therefore, measure credit worthiness.
13. Correct answer d. The current ratio and the quick ratio both compare current assets with current liabilities, however, the quick ratio eliminates inventory from current assets as it may not be readily converted into cash. Therefore, the disparity between the ratios is caused by the high level of inventory.
14. Correct answer d. The acid test (quick) ratio does not include inventory in the calculation of current assets and, therefore, measures debt-paying ability without liquidating inventory.
15. Correct answer b. The purpose of the acid test ratio is to measure debt-paying ability using highly liquid assets. Items such as prepaid insurance may be excluded as they do not represent current cash flow.
16. Correct answer d. Dedham's acid test ratio is 1.05 as shown below.
- $$(\$10,000 + \$20,000 + \$12,000) \div (\$15,000 + \$25,000) = \underline{1.05}$$
17. Correct answer b. Because the payment will have a proportionally greater effect on current liabilities than on current assets, the company's current ratio will increase.
18. Correct answer a. Sterling is the most highly leveraged corporation because it has the greatest percentage of debt or financing with a fixed charge, e.g., interest.
19. Correct answer b. Sahara's degree of financial leverage is 1.36 as shown below.

$$\begin{array}{lcl} \text{Degree of financial leverage} & = & \text{EBIT} \div \text{EBT} \\ & = & (\$1,320,000 + \$880,000 + \$800,000) \div (\$1,320,000 + \$880,000) \\ & = & \$3,000,000 \div \$2,200,000 \\ & = & \underline{1.36} \end{array}$$

20. Correct answer c. The degree of operating leverage measures the percent change in EBIT caused by a percent change in sales. Therefore, a degree of operating leverage of 3 indicates that a 1% change in sales will cause a 3% change in EBIT.
21. Correct answer a. Financial leverage is defined as the use of financing with a fixed charge such as interest. Firms with a high degree of financial leverage make significant use of debt and, therefore, have high debt-to-equity ratios.
22. Correct answer a. Financial leverage is defined as the use of financing with a fixed charge such as interest. Since debt is financing with a fixed charge, the use of debt increases financial leverage.
23. Correct answer d. Earnings to Mineral's shareholders will increase by 7.5% as shown below.

$$\begin{aligned}\text{Degree of financial leverage} &= \% \text{ change in net income} \div \% \text{ change in EBIT} \\ 1.5 &= X \div 5\% \\ X &= \underline{7.5\%}\end{aligned}$$

24. Correct answer a. Because of the magnification of financial leverage, a decrease in earnings before interest and taxes will result in a proportionally larger decrease in earnings per share.
25. Correct answer c. Mica's debt-to-equity ratio is 32.2% as shown below.

$$\begin{aligned}\text{Debt-to-equity ratio} &= \text{Total debt} \div \text{Equity} \\ &= (\$84,000 + \$11,000 + \$77,000) \div (\$300,000 + \$28,000 + \$206,000) \\ &= \$172,000 \div \$534,000 \\ &= \underline{32.2\%}\end{aligned}$$

26. Correct answer c. Since Borglum is seeking a supplier that is stable, it should select Rockland as this supplier has a relatively low level of financial risk indicated by its debt/equity ratio and degree of financial leverage, both of which are below the industry average, and a current ratio that is above the industry average.
27. Correct answer d. The debt-to-total assets ratio indicates the percentage of assets financed by creditors and helps to determine how well creditors are protected in case of insolvency. From the perspective of debt-paying ability, the lower this ratio, the better.

28. Correct answer c. Since Easton Bank is seeking the company that is most likely to meet its loan obligations, the bank should select Astor. Both the degree of financial leverage and the debt/equity ratio are measures of debt-paying ability; Astor is below the industry average for both measures, indicating a low level of financial risk.

29. Correct answer a. The company's debt/equity ratio is .5 to 1 as shown below.

$$\begin{aligned}
 \text{Current liabilities} &= \$640,000 \div 3.2 \\
 &= \$200,000 \\
 \text{Equity} &= \$990,000 - (\$200,000 + \$130,000) \\
 &= \$660,000 \\
 \text{Debt/equity ratio} &= (\$130,000 + \$200,000) \div \$660,000 \\
 &= \underline{.5 \text{ to } 1}
 \end{aligned}$$

30. Correct answer b. The company's times-interest earned ratio is 1.0. The ratio is calculated as EBIT  $\div$  interest expense. Since interest expense is equal to EBIT, the ratio is 1.0.

31. Correct answer c. Since Marble Savings Bank is seeking the company that is most likely to meet its loan obligations, the bank should select Nutron. Both the degree of financial leverage and the debt/equity ratio are measures of debt-paying ability; Nutron is below the industry average for both measures, indicating a low level of financial risk.

32. Correct answer c. As shown by the data, Strickland's competitor has a greater degree of financial leverage and a higher debt/equity ratio. The two measures indicate that the competitor makes greater use of outside financing than Strickland. Strickland should, therefore, consider increased outside borrowing to increase flexibility and fund research and development.

33. Correct answer c. Lowell's accounts receivable turnover in days is 36.5 as shown below.

$$\begin{aligned}
 \text{Accts receivable turnover (days)} &= 365 \div (\text{Credit sales} \div \text{Average accounts receivable}) \\
 &= 365 \div [\$220,000 \div (\$20,000 + \$24,000) \div 2] \\
 &= 365 \div (\$220,000 \div \$22,000) \\
 &= 365 \div 10 \\
 &= \underline{36.5 \text{ days}}
 \end{aligned}$$

34. Correct answer c. Maydale's accounts receivable turnover ratio is 10.00 as shown below.

$$\begin{aligned}
 \text{Accts receivable turnover ratio} &= \text{Credit sales} \div \text{Average accounts receivable} \\
 &= \$3,600,000 \div [(\$320,000 + \$400,000) \div 2] \\
 &= \$3,600,000 \div \$360,000 \\
 &= \underline{10.00}
 \end{aligned}$$

35. Correct answer d. Both Zubin's inventory turnover and accounts receivable turnover ratios will decrease under these circumstances. The numerator values of these are cost of goods sold and credit sales, respectively. If these values both decline, the value of both ratios will decline.

36. Correct answer b. Lampasso's inventory turnover ratio is 3.5 times as shown below.

$$\begin{aligned}\text{Inventory turnover ratio} &= \text{Cost of goods sold} \div \text{Average inventory} \\ &= \$24,500 \div [(\$6,400 + \$7,600) \div 2] \\ &= \$24,500 \div \$7,000 \\ &= \underline{3.5 \text{ times}}\end{aligned}$$

37. Correct answer c. Garland's inventory turnover ratio is 4.01 as shown below.

$$\begin{aligned}\text{Inventory turnover ratio} &= \text{Cost of goods sold} \div \text{Average inventory} \\ &= \$527,000 \div [(\$125,000 + \$138,000) \div 2] \\ &= \$527,000 \div \$131,500 \\ &= \underline{4.01}\end{aligned}$$

38. Correct answer b. Makay's inventory turnover ratio is 5.0 times as shown below.

$$\begin{aligned}\text{Inventory turnover ratio} &= \text{Cost of goods sold} \div \text{Average inventory} \\ &= \$140,000 \div [(\$30,000 + \$26,000) \div 2] \\ &= \$140,000 \div \$28,000 \\ &= \underline{5.0 \text{ times}}\end{aligned}$$

39. Correct answer c. Globetrade's current ratio would decrease as a result of the change to LIFO because the value of ending inventory would be lower thus decreasing the firm's current assets. Globetrade's inventory turnover ratio would increase as a result of the change to LIFO because the cost of goods sold would increase.

40. Correct answer b. Lancaster's accounts receivable turnover ratio is 10.15 as shown below.

$$\begin{aligned}\text{Accts. receivable turnover} &= \text{Credit sales} \div \text{Average accounts receivable} \\ &= [\$1,700,000 \times (1 - .06)] \div [(\$168,000 + \$147,000) \div 2] \\ &= \$1,598,000 \div \$157,500 \\ &= \underline{10.15}\end{aligned}$$

41. Correct answer d. Cornwall's days' sales in accounts receivable is 23 as shown below.

$$\begin{aligned}\text{Days' sales in Accts. Rec.} &= \text{Average accounts receivable} \div (\text{Credit sales} \div 360) \\ &= [(\$68,000 + \$47,000) \div 2] \div (\$900,000 \div 360) \\ &= \$57,500 \div \$2,500 \\ &= \underline{23 \text{ days}}\end{aligned}$$

42. Correct answer a. Both measures have increased because both sales and cost of goods sold have increased while average accounts receivable and average inventory have remained the same.

43. Correct answer c. Caper's fixed asset turnover is 2.3 times calculated as follows.

$$\begin{aligned}\text{Fixed asset turnover} &= \text{Sales} \div \text{Average net property, plant, \& equipment} \\ &= \$3,000,000 \div \$1,300,000 \\ &= \underline{2.3 \text{ times}}\end{aligned}$$

44. Correct answer b. The accounts payable turnover is 7.0 times as shown below.

$$\begin{aligned}\text{Accounts payable turnover} &= \text{Credit purchases} \div \text{Average accounts payable} \\ &= \$24,500^* \div [(\$3,320 + \$3,680) \div 2] \\ &= \$24,500 \div \$3,500 \\ &= \underline{7.0 \text{ times}}\end{aligned}$$

\*COGS used as credit purchases

45. Correct answer c. The only measure not affected by the purchase of its own common stock is Douglas' net profit margin. Both the debt/equity ratio and the earnings per share are affected by the number of outstanding shares of common stock while the current ratio is affected by the amount of cash held.

46. Correct answer a. Beechwood's return on shareholders' equity is 19.2% as shown below.

$$\begin{aligned}\text{ROE} &= \text{Net income} \div \text{Average equity} \\ &= \$96,000 \div [(\$300,000 + \$12,000 + \$155,000 + \$300,000 + \$28,000 + \$206,000) \div 2] \\ &= \$96,000 \div \$496,000 \\ &= \underline{19.2\%}\end{aligned}$$

47. Correct answer b. Moreland's total asset turnover is 1.37 as calculated below.

$$\begin{aligned}\text{Total asset turnover} &= \text{Sales} \div \text{Average total assets} \\ &= \$900,000 \div [(\$48,000 + \$68,000 + \$125,000 + \$325,000 + \$62,000 \\ &\quad + \$35,000 + \$47,000 + \$138,000 + \$424,000) \div 2] \\ &= \$900,000 \div \$657,000 \\ &= \underline{1.37}\end{aligned}$$

48. Correct answer b. Interstate's additional investment in operating assets will increase the total value of the firm's net property, plant, and equipment and will, therefore, decrease the operating asset turnover and the return on operating assets. The firm's operating income margin will be unaffected by this investment.

49. Correct answer b. If Colonie increases its inventory turnover, the value of inventory will likely be lower which will lower the firm's total assets. Decreasing the use of equity financing will stabilize (or reduce) the amount of equity outstanding. Both lower total assets and lower total equity would result in an increase in Colonie's return on equity.

50. Correct answer a. Merit's book value per share is \$1.88 as calculated below.

$$\begin{aligned}
 \text{Book value per share} &= (\text{Total equity} - \text{Preferred equity}) \div \text{Common shares outstanding} \\
 &= (\$26,433,841^* - \$3,554,405) \div 12,195,799 \\
 &= \$22,879,436 \div 12,195,799 \\
 &= \underline{\$1.88}
 \end{aligned}$$

$$*\$24,209,306 + \$2,861,003 - \$223,551 - \$412,917$$

51. Correct answer b. Because a stock dividend increases the number of common shares outstanding, Donovan's book value per common share will decrease.
52. Correct answer c. Because the market price per share has increased while earnings per share remained the same, Arnold's price/earnings ratio has increased showing a positive trend in growth opportunities in Year 2.
53. Correct answer c. The estimated per share value of Clark's common stock is \$15.00 as calculated below.

$$\begin{aligned}
 \text{Estimated value per share} &= (\text{Net income} \div \text{Shares outstanding}) \times \text{Price/earnings ratio} \\
 &= (\$3,750,000 \div 3,000,000) \times 12 \\
 &= \underline{\$15.00}
 \end{aligned}$$

54. Correct answer b. The value per share of Kell's common stock is \$16.50 as shown below.

$$\begin{aligned}
 \text{Market to book ratio} &= \text{Current price} \div \text{Book value per share} \\
 1.5 &= X \div [(\$3,000,000 + \$24,000,000 + \$6,000,000) \div 3,000,000] \\
 1.5X &= \$11.00 \\
 X &= \underline{\$16.50}
 \end{aligned}$$

55. Correct answer a.

Beg. Balance	100,000	x 3/12	x 1.1	27,500
April 1st	110,000	x 3/12	x 1.1	30,250
July 1st	121,000	x 3/12		30,250
October 1st	116,000	x 3/12		<u>29,000</u>
				<u>117,000</u>



56. Correct answer c. ABC's earnings per share is \$4.38 as shown below.

Weighted average shares	1,060,000 x 5/12	441,667
	1,120,000 x 7/12	<u>653,333</u>
		1,095,000

$$\begin{aligned}\text{Earnings per share} &= (\text{Net income} - \text{Preferred dividends}) \div \text{Weighted average shares} \\ &= [\$5,300,000 - (10\% \times \$100 \times 50,000)] \div 1,095,000 \\ &= \$4,800,000 \div 1,095,000 \\ &= \underline{\underline{\$4.38}}\end{aligned}$$

57. Correct answer c. Devlin's price/earnings ratio is 7.08 as shown below.

$$\begin{aligned}\text{Price/earnings ratio} &= \text{Market price per share} \div \text{Earnings per share} \\ &= \$34 \div \$4.80 \\ &= \underline{\underline{7.08}}\end{aligned}$$

58. Correct answer b. Appleseed's price/earnings ratio is 9.09 as shown below.

$$\begin{aligned}\text{Earnings per share} &= (\text{Net income} - \text{Preferred dividends}) \div \text{Common shares outstanding} \\ &= [\$588,000 - (\$6 \times 10,000)] \div 120,000 \\ &= \$528,000 \div 120,000 \\ &= \$4.40 \\ \text{Price/earnings ratio} &= \text{Market price per share} \div \text{Earnings per share} \\ &= \$40 \div \$4.40 \\ &= \underline{\underline{9.09}}\end{aligned}$$

59. Correct answer d. Archer's stock is undervalued by approximately 25% as calculated below.

$$\begin{aligned}\text{Estimated market value} &= \text{Industry average P/E ratio} \times \text{Archer earnings per share} \\ &= 14.00 \times \$3.20 \\ &= \$44.80 \\ \text{Archer market difference} &= \$44.80 - \$36.00 \\ &= \$8.80 \\ \text{Percentage difference} &= \$8.80 \div \$36.00 \\ &= \underline{\underline{24.4\%}}\end{aligned}$$

60. Correct answer a. The price/earnings (P/E) ratio expresses the relationship between the market price of a stock and the stock's earnings per share. A steady drop in a firm's P/E ratio could, therefore, indicate that earnings per share has been increasing while the market price of the stock has held steady.

61. Correct answer c. Collins earnings per share is \$2.90 as shown below.

$$\begin{aligned}\text{Earnings per share} &= (\text{Net income} - \text{Preferred dividends}) \div \text{Common shares outstanding} \\ &= (\$350,000 - \$60,000^*) \div 100,000 \\ &= \underline{\$2.90}\end{aligned}$$

\*Preferred dividends =  $(\$100 \times .06) \times 10,000 = \$60,000$

62. Correct answer c. When the common shares outstanding increase as the result of a stock dividend or a stock split, retroactive recognition must be given to these events for all comparative earnings per share presentations. Therefore, Ray Company would 1,000,000 shares for computing earnings per share.

63. Correct answer b. Esther's earnings per share was \$8.06 as shown below.

Weighted average shares	<u>Shares</u>	<u>Months</u>	<u>Weighted Average</u>
	10,000	5/12	4,170
	12,000	7/12	<u>6,996</u>
			11,166

$$\begin{aligned}\text{Preferred dividends} &= (\$100 \times .06) \times 5,000 \\ &= \$30,000\end{aligned}$$

$$\begin{aligned}\text{Earnings per share} &= (\text{Net income} - \text{Preferred dividends}) \div \text{Common shares outstanding} \\ &= (\$120,000 - \$30,000) \div 11,166 \\ &= \underline{\$8.06}\end{aligned}$$

64. Correct answer b. Ray Company's weighted average number of shares for calculating earnings per share is 137,500 calculated as follows.

Weighted average shares	<u>Shares</u>	<u>Months</u>	<u>Weighted Average</u>
	120,000	2/12	20,000
	108,000	3/12	27,000
	138,000	5/12	57,500
	198,000	2/12	<u>33,000</u>
			<u>137,500</u>

65. Correct answer a. Dyle's yield on common stock is 11.11% as shown below.

$$\begin{aligned}\text{Dividend yield} &= \text{Dividends per common share} \div \text{Market price per common share} \\ &= (\$700,000 \div 350,000) \div \$18 \\ &= \underline{11.11\%}\end{aligned}$$

66. Correct answer c. Oakland's dividend yield was 2.00% calculated as follows.

$$\begin{aligned}\text{Dividend yield} &= \text{Dividends per common share} \div \text{Market price per common share} \\ &= (4 \times \$0.20) \div \$40.00 \\ &= \underline{2.00\%}\end{aligned}$$

67. Correct answer c. Dividend yield indicates the relationship between the dividends per common share and the market price per common share and is calculated by dividing the dividends by the market price.

68. Correct answer d. Mayson's dividend yield was 3.33% as shown below.

$$\begin{aligned}\text{Dividend yield} &= \text{Dividends per common share} \div \text{Market price per common share} \\ &= \$1 \div \$30 \\ &= \underline{3.33\%}\end{aligned}$$

69. Correct answer d. Arnold's dividend yield has declined when compared to Year 1.

$$\begin{aligned}\text{Dividend yield} &= \text{Dividends per common share} \div \text{Market price per common share} \\ \text{Year 1} &= \$1 \div \$50 = 2.00\% \\ \text{Year 2} &= \$1 \div \$60 = 1.67\%\end{aligned}$$

70. Correct answer a. A firm's functional should be the currency of the primary economic environment in which the firm operates and should be selected on the basis of several economic factors including cash flow, sales price, and financing indicators.

71. Correct answer d. A firm's functional should be the currency of the primary economic environment in which the firm operates and should be selected on the basis of several economic factors including cash flow, sales price, and financing indicators.

72. Correct answer b. Assets acquired for cash, with financing leases, or with a line of credit must all be presented on a firm's balance sheet while assets acquired with operating leases are not included on the balance sheet (e.g., off-balance-sheet financing).

73. Correct answer d. Economic profit is defined as revenue minus all explicit and implicit costs. The implicit costs are generally referred to as opportunity costs.

74. Correct answer c. Economic profit is defined as revenue minus all explicit and implicit costs. The implicit costs are generally referred to as opportunity costs.

75. Correct answer d. Economic profit is defined as revenue minus all explicit and implicit costs. The implicit costs are generally referred to as opportunity costs.

76. Correct answer d. The economic cost of Williams' MBA studies is \$60,000.

Opportunity cost of quitting job	\$35,000
Explicit cost of studies	<u>25,000</u>
Economic cost	<u>\$60,000</u>

77. Correct answer b. Lark's economic profit was (\$25,000) as shown below.

$$\begin{aligned}\text{Economic profit} &= (\text{Net income} + \text{interest}) - (\text{Debt} + \text{Equity Opportunity Cost}) \\ &= (\$350,000 + \$100,000) - [(\$1,000,000 \times .1) + (\$2,500,000 \times .15)] \\ &= \$450,000 - \$475,000 \\ &= \underline{\underline{(\$25,000)}}\end{aligned}$$

## Section B: Corporate Finance

78. Correct answer b. Systematic risk is the variability of return on stocks or portfolios associated with changes in return on the market as a whole and is measured by the covariance between the security's return and the general market.
79. Correct answer a. Interest rate risk is the variation in the market price of a bond caused by changes in interest rates. The longer the maturity (duration) of the bond, the greater the price fluctuation associated with the given change in market required return.
80. Correct answer c. The expected current value of Frasier's common stock is \$20 as shown below.
- $$\begin{aligned}\text{Dividend} &= \text{Payout ratio} \times \text{Earnings per share} \\ &= .35 \times \$4.00 \\ &= \$1.40 \\ \text{Required return} &= \text{Risk-free rate} + \text{Beta} (\text{Market rate} - \text{Risk-free rate}) \\ &= .07 + 1.25 (.15 - .07) \\ &= .17 \\ \text{Value of stock} &= \text{Dividend} \div (\text{Required return} - \text{Dividend growth rate}) \\ &= \$1.40 \div (.17 - .10) \\ &= \underline{\underline{\$20.00}}\end{aligned}$$
81. Correct answer d. Beta is an index of systematic risk and measures the sensitivity of a stock's returns to changes in returns on the market portfolio. A firm's beta is determined by the risk characteristics of the firm. Of the options given, the payout ratio has the least impact on the firm's riskiness and therefore its beta value.
82. Correct answer c. If a firm has a beta value of 1.0, the stock has the same systematic risk as the market as a whole and should rise and fall with the market.
83. Correct answer b. A futures contract provides for delivery of a commodity at a specified price on a stipulated future date. If the price of wheat is expected to rise, the contract protects future cash flow.
84. Correct answer a. A call provision is a feature in an indenture that permits the issuer to repurchase securities at a fixed price before maturity.
85. Correct answer d. Protective clauses or restrictions in bond indentures and loan agreements are known as covenants and can include items such as working capital requirements and capital expenditure limitations.

86. Correct answer a. Protective clauses or restrictions in bond indentures and loan agreements are known as covenants and can include items such as working capital requirements and capital expenditure limitations.
87. Correct answer d. All of the restrictions listed are likely to be included as protective covenants in the indenture.
88. Correct answer c. The longer the maturity (duration) of the bond, the greater the price fluctuation associated with a given change in market required return.
89. Correct answer d. A firm would be inclined to issue debt rather than equity when the effective tax rate is high as the interest expense associated with debt reduces income and therefore reduces tax expense.
90. Correct answer a. A bond is a long-term debt instrument with a final maturity generally being 10 years or more. If the security has a final maturity shorter than 10 years, it is generally called a note.
91. Correct answer c. The post split price of the stock should be greater than \$40.00 if the dividend changed to \$.55 as the dividend yield will have increased.
92. Correct answer c. The record date, set when a dividend is declared, is the date on which an investor must be a shareholder in order to be entitled to receive the upcoming dividend.
93. Correct answer c. Refunding is replacing an old debt issue with a new one, usually to lower interest cost. Therefore, refunding is not a method for retiring preferred stock.
94. Correct answer c. Unlike interest expense, dividends are not tax deductible to the issuer.
95. Correct answer c. A disadvantage of preferred stock to the issuer is that it generally sells on a higher yield basis than bonds.
96. Correct answer c. If a firm pays off its only outstanding debt, the cost of capital is likely to increase because the cost of equity is greater than the cost of debt. If the Treasury Bond yield increases, the overall required rate of return will likely increase causing an increase in the cost of capital.
97. Correct answer d. Stability's cost of capital is 12.80% as calculated below.

Long-term debt	\$10,000,000	40% x 8%	3.20%
Common stock	10,000,000	40% x 15%	6.00%
Retained earnings	<u>5,000,000</u>	20% x 18%	<u>3.60%</u>
	\$25,000,000		<u>12.80%</u>

98. Correct answer a. Kielly's cost of capital is 12.22% as shown below.

Debt	30% x [11% (1 - .4)]	1.98%
Preferred stock	24% x 12%	2.88%
Equity	46% x 16%	<u>7.36%</u>
		<u>12.22%</u>

99. Correct answer b. Albion's cost of capital is 13.1% as calculated below.

Capital	Market Value (‘000)	Proportion of Total Financing	Market Return	Weighted Cost
Long-term debt (30,000 bonds x \$1,083.34)	\$32,500	26%	$[\text{.08} \times (1 - .4)] = \text{.048}$	1.25%
Preferred stock (100,000 shares x \$125)	12,500	10%	$1,200(\text{dividend}) / 12,500 (\text{market value}) = \text{.096}$	0.96%
Common stock (5,000,000 shares x \$16)	<u>80,000</u>	<u>64%</u>	.17	<u>10.88%</u>
	<u>125,000</u>	<u>100%</u>		<u>13.09%</u>

100. Correct answer c. Thomas' cost of capital is 10.95% as shown below.

Long-term debt	$[\text{.08} \times (1 - .4)] \times .30$	1.44%
Preferred stock	$.11 \times .25$	2.75%
Common stock	$.15 \times .45$	<u>6.75%</u>
		<u>10.94%</u>

101. Correct answer d. If Joint Products exchanges debt for equity, the firm's cost of capital is likely to increase as the cost equity is greater than the cost of debt due to the tax deductibility of interest expense.

102. Correct answer d. Cox's cost of preferred stock capital is 9.20% as shown below.

$$\begin{aligned}
 \text{Cost of preferred stock} &= \text{Stated annual dividend} \div \text{Market price} - \text{cost of issue} \\
 &= \$8 \div (\$92 - \$5) \\
 &= \underline{9.20\%}
 \end{aligned}$$

103. Correct answer a. Since common stock equity is the sum total of common stock at par, additional paid-in capital, and retained earnings, the appropriate cost retained earnings is the cost of common stock.

104. Correct answer c. The cost of capital for Hatch's retained earnings is equal to the required rate of return on the company's common stock or 18.08% as calculated below using the constant growth model.

$$\begin{aligned}
 \text{Required rate of return} &= (\text{Dividend next period} \div \text{Value}) + \text{Growth rate} \\
 &= [(\$3 \times 1.09) \div \$36] + .09 \\
 &= .0908 + .09 \\
 &= \underline{18.08\%}
 \end{aligned}$$

105. Correct answer c. The cost of capital for OFC's retained earnings is equal to the required rate of return on the company's common stock or 15.8% as shown below.

$$\begin{aligned}\text{Required rate of return} &= (\text{Dividend next period} \div \text{Value}) + \text{Growth rate} \\ &= [(\$2 \times 1.10) \div \$38] + .10 \\ &= \underline{15.8\%}\end{aligned}$$

106. Correct answer b. Angela's long-term debt is 45% of its capital structure as shown below.

$$\begin{aligned}\text{Cost of debt} &= .08 \times (1 - .4) \\ &= .048 \\ \text{WACC} &= .15X + .048(1-X) = .1041 \\ &= .102X = .0561 \\ \text{Preferred equity} &= X = .55 \\ \text{Debt} &= 1 - X = \underline{.45}\end{aligned}$$

107. Correct answer c. An increase in the return on marketable securities would cause a decrease in the optimal cash balance. The higher the denominator value, the lower the resulting solution.
108. Correct answer c. The reasons for holding cash do not include the motive to make a profit while the other three options are appropriate reasons for holding cash.
109. Correct answer d. A lock-box system is used for managing cash inflows rather than cash outflows.
110. Correct answer d. Powell would need to reduce its average collection time by 1.5 days in order to justify the use of the lockbox as shown below.

$$\begin{aligned}\text{Daily collections:} & 300 \times \$2,500 = \$750,000 \\ \text{Daily interest:} & \$750,000 \times .08 = \$60,000 \\ \text{Reduction in days:} & \$90,000 \div \$60,000 = \underline{1.5 \text{ days}}\end{aligned}$$

111. Correct answer a.

$$\begin{aligned}\text{Opening balance:} & \$2,000,000 \\ \text{January} & 2,000,000 = \$2,000,000 \times .04 / 12 = + 6,667 \\ \text{February} & +2,000,000 = \$4,000,000 \times .04 / 12 = +13,333 \\ \text{March} & +1,000,000 = \$5,000,000 \times .04 / 12 = +16,667 \\ \text{April} & -5,000,000 = 0 \\ \text{May} & -3,000,000 = \$3,000,000 \times .08 / 12 = - 20,000 \\ \text{June} & -2,000,000 = \$5,000,000 \times .08 / 12 = \underline{- 33,333} \\ & = -16,667\end{aligned}$$

112. Correct answer b.
- $$\begin{aligned}\text{Savings from trade discount} &= 1\% \times \$25,000 \times 24 = \$6,000 \\ \text{Interest to bank} &= 10\% \times \$24,750 / 12 \times 24 = \$4,950 \\ \text{Net savings} &= \$6,000 - \$4,950 = \$1,050\end{aligned}$$

113. Correct answer d. Rolling Stone should use of the methods presented except the use of drafts as shown below.

Lockbox cost:	$\$25 \times 170$	=	\$4,250
Savings	$\$5,240 - \$4,250$	=	\$990
Drafts cost:	$4,000 \times \$2$	=	\$8,000
Loss	$\$6,500 - \$8,000$	=	\$(1,500)
Bank Float:	$\$1,000,000 \times .02$	=	\$20,000
Savings	$\$22,000 - \$20,000$	=	\$2,000
Electronic Trans.	$700 \times \$18$	=	\$12,600
Savings	$\$14,000 - \$12,600$	=	\$1,400

114. Correct answer a. In order to justify the cost of a wire transfer, the transfer amount should be at least \$21,000 as shown below.

Transfer amount	$.09A \times (2 \div 360)$	=	\$10.50
	.09A	=	\$1,890
	A	=	<u>\$21,000</u>

115. Correct answer b. The use of a zero balance account can reduce all of the options presented except the disbursement float. Disbursement float refers to the period between the payment of an invoice and the clearing of the payment through the company's bank. This time period is unaffected by the use of a zero balance account.

116. Correct answer d. Typically, municipal bonds are tailored for the long-term investor while T-bills, money market funds, and commercial paper are primarily used for short-term investing.

117. Correct answer d. Treasury bills are direct obligations of the U.S. government (no default risk), sold at discount (carry no coupon rate), and are redeemed at full face value at maturity. The interest income on these securities is taxed at the federal level but is exempt from state and local taxes.

118. Correct answer b. At 12%, the bank borrowing represents the lowest cost of funds as shown below.

Trade discount:	$(.02 \div .98) \times (360 \div 60)$	=	<u>12.24%</u>
Commercial paper:	$\$9.1 - \$8.8$	=	\$0.3
	$(\$0.3 \div \$9.1) \times 4$	=	<u>13.1%</u>

119. Correct answer a.  $\$2,000 \times 20\% + \$400,000 / 360 = 1,111.11 \times 45 = \$50,000$ .

120. Correct answer c. Because Northville's change in credit terms will most likely shorten the cash conversion cycle, it is least likely that the company will need to increase short-term borrowing.



121. Correct answer a. Snug-fit's return on the incremental sales would be 34.0% as shown below.

$$\begin{aligned}
 \text{Estimated bad debt loss} &= \$80,000 \times .06 \\
 &= \$4,800 \\
 \text{Gross profit} &= \$80,000 \times .4 \\
 &= \$32,000 \\
 \text{Return on sales} &= (\$32,000 - \$4,800) \div \$80,000 \\
 &= \underline{34.0\%}
 \end{aligned}$$

122. Correct answer d. A credit manager would be most interested in liquidity ratios as these measure a firm's ability to convert assets to cash and thereby pay financial obligations.

123. Correct answer b. Foster should implement Plan B as this plan results in the highest gross profit as shown below.

$$\begin{aligned}
 \text{Plan B:} &= \text{Gross profit} - \text{Bad debt/Collection costs} - \text{Incremental cost of capital} \\
 &= (\$250,000 \times .2) - (\$3,000 + \$2,000) - [(\$90,000 - \$60,000) \times .15] \\
 &= \$50,000 - \$5,000 - \$4,500 \\
 &= \underline{\$40,500}
 \end{aligned}$$

Results for other plans: Plan A \$30,000; Plan C \$40,000; Plan D \$36,500

124. Correct answer c. A company should consider liberalizing its credit policy if it has a low cost of borrowing and the opportunity for repeat sales. Steady customers would be attracted by a liberal credit policy and if the company needs to borrow funds because of slower than expected payments, the cost would not be too high. Factors I and IV have no relationship to credit policy.

125. Correct answer c. Computer Services would need to know the cost of the investment in additional receivables or the opportunity cost of funds.

$$\begin{array}{rcl}
 \text{Correct answer b. } \$13,000 \times 20\% & = & \$2,600 \text{ CM} \\
 \text{Less } (2,000 + 2,300) \times 10\% & = & 430 \\
 \text{Less} & & 125 \\
 \text{Less} & & \underline{125} \\
 & & \underline{1,920}
 \end{array}$$

Options a,b,c produce lower amounts, as follows: \$1,850, \$1,650, \$1,300.

127. Correct answer a. The cost of not taking the trade discount (20.98%) is greater than the 12% cost of borrowing so Global should pay within the first 10 days.

$$\text{Trade discount} = (.02 \div .98) \times (360 \div 35) = \underline{20.98\%}$$

128. Correct answer b. Locar's average collection period was 26.7 days as shown below.

$$\begin{aligned}
 \text{Average collection period} &= (\text{Receivables} \times \text{Annual days}) \div \text{Credit sales} \\
 &= (\$1,380,000 \times 360) \div \$18,600,000 \\
 &= \underline{26.7 \text{ days}}
 \end{aligned}$$

129. Correct answer d. Atlantic should collect \$25,000 of receivables, purchase \$10,000 of inventory and reduce current liabilities by \$15,000. This is the only option that reduces short-term debt and thus lowers the cost of debt while satisfying the loan covenant.

130. Correct answer c. Storage costs, insurance, and opportunity cost of funds invested in inventory are all costs of carrying inventory while shipping costs are related to sales of inventory.

131. Correct answer d. The total cost that Valley will incur is \$12,100 as shown below.

Ordering cost	8 x \$200	\$ 1,600
Carrying average inventory	(50 ÷ 2) x \$100	2,500
Lost discounts	(400 x \$500) x .04	<u>8,000</u>
		<u>\$12,100</u>

132. Correct answer c. The carrying cost per unit is \$120 as shown below.

$$\begin{aligned} \text{Carrying cost} &= (\$400 + \$20) \times 25\% + \$15 \\ &= \$120 \end{aligned}$$

133. Correct answer d. The carrying cost of inventory is \$8,160 as shown below.

$$\begin{aligned} \text{Carrying cost} &= [2,400 + (2,000 \div 2)] \times (\$12 \times .20) \\ &= \underline{\underline{\$8,160}} \end{aligned}$$

134. Correct answer d. If new competition opens in the company's market area, the company's sales are likely to decline and safety stock cannot protect against this event.

135. Correct answer c. If ordering costs increase, the EOQ model would increase the order quantity. If the carrying cost increased, the EOQ model would decrease the order quantity. Purchase price and safety stock do not affect the EOQ model.

136. Correct answer d. Quantity discounts are not explicitly considered in the EOQ model as purchase price does not affect the model.

137. Correct answer d. The EOQ model assumes that order delivery times are consistent and that lead times do not vary. The other statements about EOQ are false.

138. Correct answer d. A decrease in carrying costs would result in an increase in the EOQ as it would be less costly to store units. A decrease in sales or ordering costs would decrease EOQ while the EOQ is unaffected by safety stock.

139. Correct answer b. Burke will pay the bank \$52,500 as shown below.

Balance	<u>4/1</u> \$2 mil.	<u>4/30</u> \$4 mil.	<u>5/31</u> (\$3 mil.)	<u>6/30</u> \$4 mil.
2 mths. unused credit line		2 x (\$5,000,000 x .0025)		\$25,000
1 mth. \$3 mil. borrowed		\$3,000,000 x (.09 ÷ 12)		22,500
1 mth. \$2 mil. unused		\$2,000,000 x .0025		<u>5,000</u>
				<u>\$52,500</u>

140. Correct answer d. Ideally, permanent assets are financed with long-term debt of matching maturities. The greater the portion of assets financed by short-term debt, the greater the risk that the firm will not be able to meet these obligations.
141. Correct answer a. Texas Corporation should purchase the 90-day investment as it has the highest annual yield as shown below.
- 90-day:  $\$80,000 \times .95 = \$76,000$ ;  $(\$80,000 - \$76,000) \div \$76,000 = .05 \times 4 = 20\%$   
 180-day:  $\$75,000 \times .94 = \$70,500$ ;  $(\$75,000 - \$70,500) \div \$70,500 = .06 \times 2 = 12\%$   
 270-day:  $\$100,000 \times .95 = \$95,000$ ;  $\$5,000 \div \$95,000 = (.05 \div 3) \times 4 = 7\%$   
 360-day:  $\$60,000 \times .90 = \$54,000$ ;  $\$6,000 \div \$54,000 = .11 \times 1 = 11\%$
142. Correct answer d. The firm should seek an unsecured short-term loan to finance additional capital needs during the busy season. A transaction loan is generally for one specific purpose like completing a specific contract while term and installment loans are generally one year or greater.
143. Correct answer d. A commercial bank would likely be able to provide its customers with all of these financing vehicles.
144. Correct answer b.

Cost of commercial paper financing:  $\$12,000,000 \times 3/12 \times 7\% = \$210,000$  expense

July investment:  $\$4,000,000 \times 4\% / 12 = \$13,333$  income.

No investment in August

September:  $\$2,000,000 \times 4\% / 12 = \$6,667$  income. Net cost:  $\$210,000 - \$13,333 - \$6,667 = \$190,000$

Line of credit financing: July  $\$8,000,000 \times 8\% / 12 = \$53,333$

Aug  $12,000,000 \times 8\% / 12 = 80,000$

Sep  $10,000,000 \times 8.5\% / 12 = \underline{78,833}$

Total  $\$204,166$

$\$204,166 - \$190,000 = \$14,166$  advantage to commercial paper

145. Correct answer b. The cost of foregoing the trade discount is 18.4% as shown below.

$$\begin{aligned}\text{Trade discount} &= (.02 \div .98) \times (360 \div 40) \\ &= \underline{18.4\%}\end{aligned}$$

146. Correct answer d. The effective annual interest rate cost is 13.9% as shown below.

$$\begin{aligned}\text{Effective interest rate} &= (.03 \div .97) \times (360 \div 80) \\ &= \underline{13.9\%}\end{aligned}$$

147. Correct answer d. The effective interest rate to the borrower is 13.64% as shown below.

$$\begin{aligned}\text{Effective interest rate} &= .12 \div (1 - .12) \\ &= \underline{13.64\%}\end{aligned}$$

148. Correct answer d. The face value of the note should be \$329,670 as shown below.

$$\begin{aligned}\text{Effective interest rate} &= .09 \div .91 \\ &= .0989 \\ \text{Face value of note} &= \$300,000 \times 1.0989 \\ &= \underline{\$329,670}\end{aligned}$$

149. Correct answer c. Keller would need to borrow \$176,471 as shown below.

$$\begin{aligned}\text{Interest rate} &= (\$150,000 \times .08) \div [\$150,000 - (\$150,000 \times .15)] \\ &= \$12,000 \div \$127,500 \\ &= .0943875 \\ \text{Funds required} &= \$150,000 + [(\$150,000 \times .15) \div 2] \\ &= \$161,250 \times 1.0943875 \\ &= \underline{\$176,471}\end{aligned}$$

150. Correct answer b. The compensating balance required is \$3,000,000 as shown below.

$$\begin{aligned}\text{Effective interest rate} &= (\$100,000,000 \times .10) \div X = 10.31 \\ X &= \$97,000,000 \\ \text{Compensating balance} &= \$100,000,000 - \$97,000,000 \\ &= \underline{\$3,000,000}\end{aligned}$$

151. Correct answer c. The effective interest rate is 8.75% as shown below.

$$\begin{aligned}\text{Effective interest rate} &= (\$100,000 \times .07) \div [\$100,000 - (\$100,000 \times .20)] \\ &= \$7,000 \div \$80,000 \\ &= \underline{8.75\%}\end{aligned}$$

152. Correct answer b. The compensating balance required is \$2,440,000 as shown below.

$$\begin{aligned}\text{Effective interest rate} &= (\$100,000,000 \times .10) \div X = 10.25 \\ X &= \$97,560,000 \\ \text{Compensating balance} &= \$100,000,000 - \$97,560,000 \\ &= \underline{\$2,440,000}\end{aligned}$$

153. Correct answer b. Frame will pay \$1,131,250 as shown below.

$$\begin{aligned}\text{Interest} &= (\$10,000,000 \times .02) + (\$20,000,000 \times .04) + (\$5,000,000 \times .02) \\ &= \$1,100,000 \\ \text{Fees} &= [\$10,000,000 \times (.005 \div 12 \times 3)] + [\$15,000,000 \times (.005 \div 12 \times 3)] \\ &= \$31,250 \\ \text{Total} &= \$1,100,000 + \$31,250 \\ &= \underline{\$1,131,250}\end{aligned}$$

154. Correct answer c. The effective interest rate is 8.42% as shown below.

$$\begin{aligned}\text{Effective interest rate} &= (\$100,000,000 \times .08) \div (\$100,000,000 - \$5,000,000) \\ &= \$8,000 \div \$95,000,000 \\ &= \underline{8.42\%}\end{aligned}$$

155. Correct answer d. The residual theory of dividends treats dividends as strictly a financing decision with the payment of cash dividends determined solely by the availability of acceptable investment proposals.

156. Correct answer b. Mason should invest in all projects that have an IRR greater than the cost of capital. In this case, that means  $A + B + C = \$200k + \$350k + \$570k = \$1,120,000$ . This will be financed 40% debt and 60% equity, or  $\$1,120,000 \times 60\% = \$672,000$  equity. Since the \$1 million is available internally,  $\$1,000,000 - \$672,000 = \$328,000$  will not be need for projects, \$328,000 can be paid as dividends under the residual dividend policy.

157. Correct answer d. The liquidity of a company is a prime consideration in dividend decisions because dividends represent a cash outflow. A growing company may be profitable but not liquid or a company may wish a liquidity cushion to provide flexibility.

158. Correct answer b. After a stock-split, a company rarely maintains the same per share dividend but usually reduces to half or slightly about half. Therefore, total dividend payouts remain approximately the same.

159. Correct answer a. The company will pay \$12,000 in common stock dividends on the 20,000 shares outstanding (25,000 issued – 5,000 treasury stock) at \$.60 per share.

160. Correct answer a. If the U.S. inflation rate declines relative to the Swiss inflation rate, the U.S. dollar will purchase a greater number of Swiss francs resulting in the depreciation of the Swiss franc.
161. Correct answer c. If the U.S. dollar appreciates against the British pound, it will take fewer dollars to purchase British goods thus increasing the demand for these products.
162. Correct answer c. If Country A has more exports than imports, its demand for foreign currency will diminish resulting in the appreciation of A's currency.
163. Correct answer d. If R's real interest rates are lower than the real interest rates in T, there will be lower demand for R currency investments resulting in the depreciation of R's currency relative to T's currency.

### Section C: Decision Analysis

164. Correct answer c. Garner could incur up to \$270,000 of expense and still break even due to savings of \$270,000 as shown below.

Interest expense avoided	=	$(3 \times \$1,500,000) \times [(.07 \div 12) \times 8]$
	=	$\$4,500,000 \times .046666$
	=	$\$210,000$
Additional income earned	=	$(3 \times \$1,500,000) \times [(.04 \div 12) \times 4]$
	=	$\$4,500,000 \times .013333$
	=	$\$60,000$
Total savings	=	$\$210,000 + \$60,000$
	=	<u><math>\\$270,000</math></u>

165. Correct answer c. Bolger's breakeven point would increase by 375 units as shown below.

Current breakeven point:	$(\$300 - \$210)X$	=	$\$360,000$
	$\$90 X$	=	$\$360,000$
	$X$	=	$4,000 \text{ units}$
Future breakeven point:	$(\$300 - \$220)X$	=	$\$350,000$
	$\$80X$	=	$\$350,000$
	$X$	=	$4,375 \text{ units}$
Difference	$4,375 - 4,000$	=	<u><math>375 \text{ units}</math></u>

166. Correct answer b. Phillips breakeven volume is 82,500 units, and the company's anticipated operating income is \$9,250,000 as calculated below.

Breakeven point:	$(\$160 - \$60) X$	=	$(\$55 \times 150,000)$
	$\$100X$	=	$\$8,250,000$
	$X$	=	<u><math>82,500 \text{ units}</math></u>
Operating income	=	$[(\$160 - \$60) \times 175,000] - \$8,250,000$	
	=	<u><math>\\$9,250,000</math></u>	

167. Correct answer c. Cost-volume-profit analysis assumes that variable costs do not change with a change in volume; therefore, option C is the correct response. All other assumptions presented are correct.

168. Correct answer b. At the breakeven point, Ace would sell 9,231 units of Product C based on a sales mix of 80% Product C.

$$\begin{aligned}
 \text{Breakeven point:} \quad & 80\% \text{ C contribution} + 20\% \text{ F contribution} = \text{Fixed costs} \\
 & [(.8 \times \$2) + (.2 \times \$5)] \times A = \$30,000 \\
 & \$2.60A = \$30,000 \\
 & A = 22,538.46 \\
 \text{Product C breakeven point:} \quad & 11,538.46 \times 80\% = \underline{9,231 \text{ units}}
 \end{aligned}$$

169. Correct answer c.
- |                            |     |
|----------------------------|-----|
| 12 x 3,500 = 42,000        | .28 |
| 20 x 3,000 = 60,000        | .40 |
| 12 x 4,000 = <u>48,000</u> | .32 |
| 150,000                    |     |

$$\begin{aligned}
 .28 \times (18-3) &= 4.2 \\
 .40 \times (15-1) &= 5.6 \\
 .32 \times (20-0) &= \underline{6.4} \\
 &16.2 \text{ weighted CM}
 \end{aligned}$$

$$\text{Fixed: } 165,000 + 249,000 + 316,000 + 565,000 = 1,295,000 / 16.2 = 79,938$$

170. Correct answer d. In order to achieve a net income of \$1.3 million, Carson will need to sell 90,000 units as shown below.

$$\begin{aligned}
 \$100x - \$75x - \$250,000 &= \$1,300,000 \div (1 - .35) \\
 \$25x - \$250,000 &= \$2,000,000 \\
 \$25x &= \$2,250,000 \\
 x &= \underline{90,000 \text{ units}}
 \end{aligned}$$

171. Correct answer b. Metal Craft would need to sell 54,300 Model No. 153 socket sets in order to generate \$161,200 in operating income based on the following calculation.

$$\begin{aligned}
 \text{Sales mix: Model 109: 20\%; Model 145: 50\%; Model 153: 30\%} \\
 \text{Breakeven: } (.2 \times \$10 - \$5.50)A + (.5 \times \$15 - \$8)A + (.3 \times \$20 - \$14)A &= \$161,200 \\
 & \$ .90A + \$3.50A + \$1.80A = \$1,122,200 \\
 & \$6.20A = \$1,122,200 \\
 & A = 181,000 \text{ sets} \\
 \text{Model 153 breakeven: } 181,000 \text{ sets} \times 30\% &= \underline{54,300 \text{ sets}}
 \end{aligned}$$

172. Correct answer d. The total attendance for “Mr. Wonderful” would need to be 31,000 to product an after-tax contribution of \$210,000 as shown below.

$$\begin{aligned}(\$18 - \$3)A - \$165,000 &= \$210,000 \div (1 - .3) \\ \$15 A &= \$465,000 \\ A &= \underline{31,000}\end{aligned}$$

173. Correct answer d. Robin Company’s required sales would be \$1,200,000 as shown below.

$$\begin{aligned}(1 - \text{tax rate}) \times (\text{Contribution} - \text{Fixed costs}) &= \text{Return on sales} \\ (1 - .4) \times (.30A - \$240,000) &= .06A \\ .12A &= \$144,000 \\ A &= \underline{\$1,200,000}\end{aligned}$$

174. Correct answer c. Selling price: \$45  
Variable cost = 37% (2% + 25% + 10%)  
Contribution margin % = 63%  
Contribution margin \$ = 45 x 63% = \$28.35

$$\begin{aligned}28.35X - 104,720^* &= .2 \times 45X \\ 28.35X &= 9X + 104,720 \\ 19.35X &= 104,720 \\ X &= \underline{5,412}\end{aligned}$$

$$* \text{ FIXED: } 35,000 + 18,500 + 9,320 + 7,500 + 4,400 + 30,000 = 104,720$$

175. Correct answer b. To earn an 8% after-tax return on the \$300,000 investment, Zipper Company would require sales totaling \$914,286 as shown below.

$$\begin{aligned}\text{Contribution} - \text{Fixed costs} &= 8\% \text{ of investment} \div (1 - \text{tax rate}) \\ .7A - \$600,000 &= (.08 \times \$300,000) \div (1 - .4) \\ .7A - \$600,000 &= \$24,000 \div .6 \\ .7A &= \$600,000 + \$40,000 \\ A &= \underline{\$914,286}\end{aligned}$$

176. Correct answer b. Breakeven quantity can be defined as the point where operating income is equal to zero. Therefore, revenue must equal total costs.
177. Correct answer b. To maximize contribution, Eagle Brand should produce 250 units of Product X at \$20 contribution per unit for a total of \$5,000. Option D provides a higher contribution but Eagle does not have enough raw material to produce all these units.
178. Correct answer b. Silverstone’s profits this will be \$80,000 as shown below.

$$\text{Contribution margin} = 1 - (\$270,000 \div \$450,000)$$



$$\begin{aligned}
 &= 40\% \\
 \text{Profit} &= (.4 \times \$500,000) - \$120,000 \\
 &= \underline{\$80,000}
 \end{aligned}$$

179. Correct answer c. Breeze's operating profit would increase by \$1,000. Operating profit equals contribution minus fixed costs. If contribution increases while fixed costs remain the same, operating profit will increase by the same amount.

180. Correct answer a. Wilkinson's income would be \$30,500 as shown below.

$$\begin{aligned}
 \text{Income} &= (\text{Contribution margin} \times \text{selling price} \times \text{units}) - \text{Fixed costs} \\
 &= (.45 \times \$30 \times 3,000) - \$10,000 \\
 &= \underline{\$30,500}
 \end{aligned}$$

181. Correct answer b. The maximum contribution margin that Cervine can generate is \$689,992 as shown below.

$$\begin{aligned}
 \text{Contribution Product A} &= \$100 - \$53 - \$10 &= \$37 \\
 \text{Contribution Product B} &= \$80 - \$45 - \$11 &= \$24 \\
 \text{Hours Product A} &= 10,000 \text{ units} \times 2 \text{ hours} &= 20,000 \text{ hours} \\
 \text{Units Product B} &= (40,000 \text{ hrs.} - 20,000 \text{ hrs.}) \div 1.5 &= 13,333 \text{ units} \\
 \text{Contribution} &= (\$37 \times 10,000) + (\$24 \times 13,333) &= \underline{\$689,992}
 \end{aligned}$$

182. Correct answer c. Specialty Cakes will break even by producing 4,947 round cakes and 14,842 heart-shaped cakes as shown below.

$$\begin{aligned}
 \text{Breakeven: } (.25 \times \$4A) + (.75 \times \$5A) &= \$94,000 \\
 \$4.75A &= \$94,000 \\
 A &= 19,789 \text{ units} \\
 \text{Round cakes: } .25 \times 19,789 &= \underline{4,947} \\
 \text{Heart-shaped cakes: } .75 \times 19,789 &= \underline{14,842}
 \end{aligned}$$

183. Correct answer a. If the change is implemented, Lazar's total contribution margin would increase by \$125,000 as shown below.

$$\begin{aligned}
 \text{Decrease in direct material: } .5 \times \$5 &= \$2.50 \\
 \text{Increase in variable overhead: } (\$3 \div 2 \text{ hrs.}) \times 3.5 \text{ hrs.} - \$3 &= \$2.25 \\
 \text{Reduction in cost: } \$2.50 - \$2.25 &= \$0.25 \\
 \text{Increase in contribution: } \$0.25 \times 500,000 \text{ units} &= \underline{\$125,000}
 \end{aligned}$$

184. Correct answer c. If Ticker's sales mix shifts toward Product A, operating income will decrease if the number of units sold remains constant. Since A's contribution margin is lower than Product B's, there will be less contribution toward covering fixed costs resulting in lower operating income.
185. Correct answer b. The maximum contribution that Lazar can generate is \$2,000,000 by producing 250,000 trunks. Since the contribution margin for trunks (\$8) is more than twice the contribution margin for crates (\$3), the fact that trunks utilizes twice the machine hours is negated.
186. Correct answer d. The opportunity cost is Johnson's best alternative use of both the \$200 and the two hours. Opportunity cost is the contribution foregone by not using a limited resource in its next best alternative use.
187. Correct answer c. The benefits sacrificed by selecting an alternative use of resources is opportunity cost. Opportunity cost is the contribution foregone by not using a limited resource in its next best alternative use.
188. Correct answer d. Relevant costs and relevant revenues are those costs and revenues expected in the future that differ among alternative courses of action being considered. These are the items that affect decision making.
189. Correct answer a. A sunk cost is a past cost that cannot be changed no matter what action is taken. Therefore, joint costs incurred prior to a decision would be considered sunk.
190. Correct answer d. Since Blaze is uncertain what the sales of the new product will be and his risk tolerance is low, he should choose to pay 30% of his revenue to the mall management. As a consequence, his expenses will match his revenues and the project risk will be low.
191. Correct answer d. Benefits lost by choosing one alternative over another are referred to as opportunity costs.
192. Correct answer d. The cost of the crane to move materials would most likely be treated as a sunk cost in differential cost analysis as this cost is not likely to differ among alternatives.
193. Correct answer c. The relevant unit cost to manufacture the ice-makers is \$30 each for a total relevant cost of \$600,000. Under either alternative, there would be \$4 per unit of fixed cost remaining, therefore, this \$4 becomes irrelevant to the decision and can be deducted from the total unit cost of \$34 leaving \$30 of relevant cost.
194. Correct answer c. Plan Z is the most profitable (\$28,000), Plan X is next (\$24,000) with Plan Y the least profitable (\$20,400).

$$\begin{array}{rcl}
 \text{Plan Z: } (\$32 - \$30) \times 14,000 & = & \underline{\$28,000} \\
 \text{Plan X: } [\$36 - \$3 - (\$36 \times .1)] \times 10,000 & = & \underline{\$24,000} \\
 \text{Plan Y: } [\$38 - \$30 - (\$38 \times .1)] \times 12,000 & = & A + \$30,000 \\
 & & \$50,400 = A + \$30,000 \\
 & & A = \underline{\$20,400}
 \end{array}$$

195. Correct answer b. Auburn's average total cost at an output level of three units is \$850 as shown below.

$$\begin{aligned}\text{Average total cost} &= (\$2,000 \div 3) + (\$550 \div 3) \\ &= \underline{\underline{\$850}}\end{aligned}$$

196. Correct answer a. Kelso's average total cost at an output level of 11 units is \$113.64 as shown below.

$$\begin{aligned}\text{Average total cost} &= (\$1,000 \div 11) + (\$250 \div 11) \\ &= \underline{\underline{\$113.64}}\end{aligned}$$

197. Correct answer b. Harper's short-run marginal cost is \$130 per unit as calculated below.

$$\begin{aligned}\text{Marginal cost} &= (\$3,325,000 - \$3,000,000) \div (22,500 - 20,000) \\ &= \underline{\underline{\$130}}\end{aligned}$$

198. Correct answer b. Auburn's marginal cost for the 7<sup>th</sup> unit is \$210 as shown below.

$$\begin{aligned}\text{Marginal cost} &= \$1,250 - \$1,040 \\ &= \underline{\underline{\$210}}\end{aligned}$$

199. Correct answer a. Kelso's marginal cost for the 12<sup>th</sup> unit is \$180 as shown below.

$$\begin{aligned}\text{Marginal cost} &= \$480 - \$300 \\ &= \underline{\underline{\$180}}\end{aligned}$$

200. Correct answer a. If the total cost is \$800 and average variable cost is \$5 per unit, the average fixed cost is \$3 per unit.

$$\begin{aligned}(\$5 \times 100 \text{ units}) + (A \times 100 \text{ units}) &= \$800 \\ 100A &= \$300 \\ A &= \underline{\underline{\$3}}\end{aligned}$$

201. Correct answer b. Crawford's marginal cost of the 23<sup>rd</sup> unit is \$40 as shown below.

$$\begin{aligned}\text{Marginal cost} &= \$1,330 - \$1,290 \\ &= \underline{\underline{\$40}}\end{aligned}$$

202. Correct answer c. The level that would produce the highest operating income for Parker is 14 units as shown below.

$$\begin{aligned}8 \text{ units: } 8(\$100,000 - \$50,000) - \$400,000 &= 0 \\ 10 \text{ units: } 10(\$100,000 - \$50,000) - \$400,000 &= \$100,000 \\ 14 \text{ units: } 14(\$100,000 - \$45,000) - \$600,000 &= \underline{\underline{\$170,000}} \\ 17 \text{ units: } 17(\$100,000 - \$45,000) - \$800,000 &= \$135,000\end{aligned}$$

203. Correct answer c. If Johnson accepted the special order, the company's operating income would increase by \$37,500 as shown below.

Special order price	\$2.50
Less variable cost*	<u>5.00</u>
Contribution margin	\$2.50
Contribution to operating income:	15,000 x \$2.50 = <u>\$37,500</u>

\*Fixed costs and selling costs are not relevant

204. Correct answer c. If the Robo Division submits a bid for \$8,000,000, the division will lose \$500,000 but GMT will gain \$1,700,000 as the transfer price is not relevant to GMT.

Robo Division: \$8,000,000 - \$3,700,000 - \$4,800,000	=	(\$500,000)
GMT Industries: \$8,000,000 - \$1,500,000 - \$4,800,000	=	\$1,700,000

205. Correct answer b. BCC should submit a bid of \$772 per unit as this price covers all incremental costs.

Material	\$500	
Direct labor	240	(\$20 x 12)
Variable overhead	24	(\$2 x 12)
Administrative costs	<u>8</u>	
Bid price	<u>\$772</u>	

206. Correct answer d. When making a special order decision, Bedford would need to cover incremental costs which include variable costs of the product (I) and direct fixed costs of the order (III). In addition, Bedford should consider if there is a more beneficial use of the idle capacity, the opportunity cost of the decision (IV).

207. Correct answer a. Since Raymund has idle capacity, the company needs to cover only the incremental variable costs of \$10 (\$50,000 ÷ 5,000) per unit so this should be the bid price to gain a new customer.

208. Correct answer b. The price that Hickory paid for the 4,500 pounds of Kaylene (\$3.40/lb.) is irrelevant; it is a sunk cost. The future price of Kaylene (\$4.05/lb.) is relevant to future operations.

209. Correct answer b. The minimum price that Gardner should charge for the special order is \$96.50 per unit. This price covers the variable cost of KT-6500 plus the forgone contribution from Product XR-2000 as shown below.

Hours required for 1,000 units of KT-6500	3,000 hours
Units of XR-2000 not produced: 3,000 hours ÷ 4	750 units
XR-2000 contribution: \$105 - \$24 - \$10 - \$5 - \$4	\$62 per unit
KT-6500 bid price:	= [(750 x \$62) ÷ 1m000] + \$27 + \$12 + \$6 + \$5
	= \$46.50 + \$27 + \$12 + \$6 + \$5
	= <u>\$96.50</u>

210. Correct answer a. Green should accept the offer of \$280,000 as it will cover all incremental costs and increase operating profit.

Selling price	\$280,000	
Direct material	66,000	
Direct labor	120,000	
Variable overhead	48,000	(.4 x \$120,000)
Administrative costs	<u>12,000</u>	(.1 x \$120,000)
Contribution	<u>\$ 34,000</u>	

211. Correct answer c. The option (a) of purchasing externally is more costly the manufacturing internally, because Fixed OH costs are not avoidable. The option (b) is not possible due to the capacity restrictions. This leaves options (c) and (d), with option (d) being more costly than (c).

212. Correct answer c. The relevant cost to make the ice-makers is \$600,000; to buy the units, the relevant cost is \$528,000 as shown below.

$$\begin{array}{lcl} \text{Make:} & 20,000 \times (\$34 - \$4^*) & = \$600,000 \\ \text{Buy:} & (\$28 \times 20,000) - (\$80,000 \times .4) & = \$528,000 \end{array}$$

\*The \$4 of remaining fixed overhead applies to both alternatives and there irrelevant to the decision.

213. Correct answer b. Sunshine should not use the manufacturer's machine cost of \$.50 as it is based on 1.6 million units. Since Sunshine plans to produce 1.2 million units, the relevant cost is \$.67 ( $\$800,000 \div 1.2$  million).

214. Correct answer d. For Aril to benefit from purchasing the units rather than making the units, the purchase price must be less than \$14 as shown below.

$$\begin{array}{lcl} \text{Remaining fixed cost/unit} & = & (\$150,000 \times .6) \div 30,000 \\ & = & \$3 \\ \text{Relevant cost to make unit} & = & \$3 + \$11 \\ & = & \underline{\underline{\$14}} \end{array}$$

215. Correct answer b. The \$50,000 trade-in allowance is relevant to Verla's decision as it decreases the cash outflow at time zero when the machine is purchased.

216. Correct answer c. Jones should process Product C further because the incremental revenue exceeds the incremental cost. Product B should be sold at split-off as the incremental revenue is less than the incremental cost.

$$\begin{array}{lcl} \text{Product C: } [70,000 \times (\$12.50 - \$10.25)] - \$140,000 & = & \$17,500 \\ \text{Product B: } [20,000 \times (\$8.00 - \$5.50)] - \$60,000 & = & (\$10,000) \end{array}$$

217. Correct answer b. Oakes should continue to process Beracyl as the incremental revenue exceeds the incremental cost of processing; Mononate should be sold at split-off as the incremental revenue is less than the incremental cost of further processing.

$$\begin{array}{lcl} \text{Beracyl: } [60,000 \times (\$18 - \$15)] - \$115,000 & = & \$65,000 \\ \text{Mononate: } [40,000 \times (\$10 - \$7)] - \$125,000 & = & (\$5,000) \end{array}$$

218. Correct answer d. Whitman's contribution margin will be \$380,000 if the Restaurant segment is discontinued as shown below.

$$\begin{aligned}\text{Contribution:} &= [.95 \times (\$400,000 + \$500,000)] - [.95 \times (\$300,000 + \$200,000)] \\ &= \$855,000 - \$475,000 \\ &= \underline{\$380,000}\end{aligned}$$

219. Correct answer d. Whitman's segments have the following contribution margin ratios:

Merchandising	$\$500,000 - \$300,000 = \$200,000 \div \$500,000$	=	40%
Automotive	$\$400,000 - \$200,000 = \$200,000 \div \$400,000$	=	50%
Restaurant	$\$100,000 - \$70,000 = \$30,000 \div \$100,000$	=	30%

220. Correct answer a. The costs relevant to this decision are the incremental costs of production of \$20,000 material and \$5,000 labor. The cost of the machinery is a sunk cost and therefore irrelevant.

221. Correct answer c. Reynolds should continue to produce and sell the fertilizer as it contributes \$2.50 (\$18.50 - \$12.25 - \$3.75) per bag toward coverage of fixed costs.

222. Correct answer c. Parklin's operating income will go from \$500 to (\$1,500) if Segment B is closed, a decrease of \$2,000.

Sales	\$10,000	
Variable cost of goods sold	4,000	
Fixed cost of goods sold	2,500	(+\$1,000 from Segment B)
Gross margin	3,500	
Variable selling & admin.	2,000	
Fixed selling & admin.	3,000	(\$1,500 from Segment B)
Operating loss	<u>(\$1,500)</u>	

223. Correct answer b. Grapevine should consider items 1, 2, and 3. Item 1 will affect future revenue. Items 2 and 3 will be eliminated and lower Grapevine's future costs. Item 4 will continue and is irrelevant. Items 5 and 6 are sunk costs and also irrelevant.

224. Correct answer c. The production and sale of the new dolls would decrease the company's profit by \$39,200 as shown below.

Contribution	\$400,000	[10,000 x (\$100 - \$60)]
Fixed costs	<u>456,000</u>	
Operating income	-56,000	
Tax savings @30%	<u>16,800</u>	
Net loss	<u>-\$39,000</u>	

225. Correct answer b. The company should continue the Oak Division as it is currently covering \$13,000 of its \$14,000 fixed costs. If the division is eliminated, \$7,000 of fixed costs will remain causing a \$6,000 decline in the company's operating profit (\$7,000 - \$1,000).

226. Correct answer a. If the company can produce all the units required (no constraint), the prime consideration should be the product's contribution margin. If production is constrained by the number of machine hours, the company should focus on the contribution margin per machine hour.

227. Correct answer b. The maximum net profit Elgers can earn is \$67,200 as shown below.

Contribution	\$160,000	[40,000 x (\$12 - \$8)]
Fixed costs	<u>48,000</u>	
Operating profit	112,000	
Tax @ 40%	<u>44,800</u>	
Net profit	<u>\$ 67,200</u>	

228. Correct answer a. If Dayton sold 30,000 units, the net income would be \$24,000.

Contribution	\$90,000	[30,000 x (\$10 - \$7)]
Fixed costs	<u>42,000</u>	
Gross profit	48,000	
Tax @ 50%	<u>24,000</u>	
Net income	<u>\$24,000</u>	

229. Correct answer b. If Raymund installs the automated process, the monthly operating income would be \$10,000 as shown below.

Reduction in variable costs:  $(\$50,000 \div 5,000) = \$10 - \$5 = \$5$

Sales	\$100,000	
Variable manufacturing	25,000	(\$5 x 5,000)
Variable selling	<u>15,000</u>	
Contribution	60,000	
Fixed manufacturing	46,000	
Fixed selling	<u>4,000</u>	
Operating income	<u>\$ 10,000</u>	

230. Correct answer c. The only combination of factors that is correct is a variable cost ratio of 32% and operating income of \$9,600,000.

Variable cost ratio:  $\$60 - (\$60 \times .2) = \$48 \div \$150 = 32\%$

Contribution margin	\$17,850,000	[175,000 x (\$150 - \$48)]
Fixed costs*	<u>8,250,000</u>	
Operating income	<u>\$ 9,600,000</u>	

\*Current fixed costs \$9,000  $(\$60 \times 150,000) - \$750,000$  eliminated

231. Correct answer b. The relevant contribution margins per machine hour are Product A \$18.50 and Product B \$16.00 as shown below.

Product A:	$\$100 - \$53 - \$10 = \$37 \div 2 \text{ hours} =$	\$18.50
Product B:	$\$80 - \$45 - \$11 = \$24 \div 1.5 \text{ hours} =$	\$16.00

232. Correct answer a. Lark should make 30,000 units of Product A, 14,000 units of Product B (utilizing the remaining machine hours), and outsource 6,000 units of Product B because this alternative makes the greatest contribution as shown below.

Hours:  $(30,000 \text{ A units} \times 3 \text{ hours}) = 90,000 \text{ hours}$   
 $160,000 \text{ hours} - 90,000 \text{ hours} = 70,000 \text{ hours remaining}$   
 $70,000 \div 5 \text{ hours for B unit} = 14,000 \text{ units of Product B}$

Contribution:  $= [(\$75 - \$30) \times 30,000] + [(\$125 - \$48) \times 14,000] + [(\$125 - \$60) \times 6,000]$   
 $= \$1,350,000 + \$1,078,000 + \$390,000$   
 $= \$2,818,000$

233. Correct answer a. Aspen should utilize the internal hours to manufacture 12,000 units of Product XT because the total contribution is greater than the contribution for Product RP.

Product XT:  $(\$60 - \$37 - \$12 - \$6) \times 12,000 = \$60,000$   
Product RP:  $(\$45 - \$24 - \$13 - \$3) \times 8,000 = \$40,000$

234. Correct answer a. The demand curve would shift to the left (fewer bagels demanded) if the cost of muffins decreased making muffins more desirable.
235. Correct answer b. An increase in consumer income would increase demand and cause a shift to the right. An increase in price is movement along the curve to a higher price.
236. Correct answer c. If the demand for a product is elastic, a percentage change in price results in a larger percentage change in demand. If the product price is increased, the demand will decrease by a larger percentage resulting in a decrease in total revenue.
237. Correct answer a. Full costing does not simplify the identification of unit fixed costs with specific products. No matter what the costing method, fixed costs are generally arbitrarily allocated to products on a basis such as direct labor hours or machine hours.
238. Correct answer d. The market-clearing (equilibrium) price is the price where quantity demanded equals quantity supplied. The current market-clearing price is \$50; if prices increase in the long-run, \$70 is a reasonable equilibrium price.
239. Correct answer d. If the demand for a product is elastic, a percentage change in price results in a larger percentage change in demand. If the product price is increased by 1%, the demand will decrease by more than 1%.
240. Correct answer a. If the demand for a product is elastic, a percentage change in price results in a larger percentage change in demand. If the product price is decreased, the demand will increase by a larger percentage resulting in an increase in total revenue.
241. Correct answer c. Leader's markup percentage would be 133.3% as shown below.

Per unit return on investment  $= (\$20,000,000 \times .2) \div 10,000$   
 $= \$400$   
Markup percentage  $= \$400 \div \$300$   
 $= \underline{133.3\%}$

242. Correct answer d. Cost-based pricing is particularly suited to suppliers who provide unique services and products. Therefore, the best situation presented is the make-to-order, state-of-the-art application.



243. Correct answer d. Bcc should bid \$1,026.30 per unit as shown below.

Direct material	\$ 500.00	
Direct labor	340.00	(\$20 x 17)
Variable overhead	34.00	(\$2 x 17)
Fixed overhead	51.00	(\$3 x 17)
Administrative cost	8.00	
Subtotal	<u>\$ 933.00</u>	
10% return	93.30	
Total	<u>\$1,026.30</u>	

244. Correct answer a. Cost-based pricing is particularly suited to suppliers who provide unique products and services.
245. Correct answer c. Market-based costing is particularly suited to companies operating in a competitive environment. Therefore, option c is not characteristic.
246. Correct answer a. Almelo's mark-up level is 12.5% as shown below.

Markup:	\$9 - \$6 cost - \$2 Fixed overhead = \$1
Markup %:	\$1 ÷ \$8 = <u>12.5%</u>

247. Correct answer d. Fennell's target price is \$268 as shown below.

15% after-tax ROI	=	[( \$3,000,000 + \$1,000,000 ) x .15]
	=	\$600,000
Per unit ROI	=	\$600,000 ÷ 25,000
	=	\$24
Target price	=	\$200 + (\$700,000 ÷ 25,000) + [\$24 x (1 - .4)]
	=	\$200 + \$28 + \$40
	=	<u>\$268</u>

248. Correct answer c. A monopolist seeking to maximize total profit will produce up to the output at which marginal revenue equals marginal cost. To sell beyond this point, the price would need to be lowered and marginal cost would exceed marginal revenue.
249. Correct answer c. Economic profit is revenue minus both explicit and implicit costs, e.g., opportunity costs. Therefore, in purely competitive markets, economic profits are not likely to be positive.

#### Section D: Risk Management

250. Correct answer a. The situation that occurs annually with an exposure of \$2,250 (\$15,000 x .15) represents the highest loss exposure. The exposure of the other situations are \$1,875 (\$75,000 x .2 ÷ 8), \$2,000 (\$200,000 x .2 ÷ 20) and \$2,000 (\$400,000 x .5 ÷ 100).

**Section E: Investment Decisions**

251. Correct answer d. Capital investments generally provide benefits into the future and, therefore, the expenditure is allocated over a period of time (depreciation). Refinancing existing working capital agreements supports current operations and is not generally treated as capital investment project.
252. Correct answer a. The net present value of the equipment being replaced is least likely to impact the investment decision. This is a sunk cost and does not affect future decisions.
253. Correct answer d. The required rate of return is not a method for evaluating investment projects but is the minimum acceptable return on an investment (discount rate, hurdle rate).
254. Correct answer b. The interest payments on the debt to finance the equipment and the increased levels of accounts payable and inventory represent incremental changes that affect future cash flows and are, therefore, relevant.
255. Correct answer c. The controller should recommend option c as the present value of this option is the highest as shown below.

Option c:	$(\$20,000 \times 6.710) + \$5,000$	=	\$139,200
Option a:			\$135,000
Option b:	$\$40,000 \times 3.312$	=	\$132,480
Option d:	$(\$5,000 \times 6.247) + (\$200,000 \times .463) + \$5,000$	=	\$128,835

256. Correct answer c. Calvin’s incremental cash flows in Year 5 are \$26,000 as shown below.

Reduction in labor cost after tax:	$\$30,000 \times .6$	=	\$18,000
Depreciation tax shield	$(\$100,000 \div 5) \times .4$	=	<u>8,000</u>
			<u>\$26,000</u>

257. Correct answer b. Olson’s net cash flow for period 3 is \$860,000 calculated as follows.

Cash inflow after tax:	$(\$1,200,000 - \$300,000) \times .6$	=	\$540,000
Tax shield Building:	$(\$2,000,000 \div 10) \times .4$	=	80,000
Tax shield Equipment	$(\$3,000,000 \div 5) \times .4$	=	<u>240,000</u>
			<u>\$860,000</u>

258. Correct answer d. The annual cash flow is \$270,000 as shown below.

From operations:	$\$650,000 - \$270,000 - \$50,000 - \$40,000 - \$8,000$	=	\$242,000
Depreciation tax shield:	$\$70,000 \times .4$	=	<u>28,000</u>
			<u>\$270,000</u>

259. Correct answer c. Kell's 5<sup>th</sup> year cash flow is \$1,120,000 as shown below.

Revenue	\$8,000,000	(100,000 x \$80)
Direct costs	-6,500,000	(100,000 x \$65)
Indirect costs	- 500,000	
Return of working capital	+ 400,000	
Salvage value	+ 300,000	
Equipment removal	- 100,000	
Cash flow	\$1,600,000	
Cash flow after tax (x .6)		\$ 960,000
Tax shield [(\$1,500,000 - \$300,000) ÷ 3] x .4		<u>160,000</u>
		<u>\$1,120,000</u>

260. Correct answer d. Kell's initial investment is \$1,900,000 as shown below.

Equipment	\$1,200,000
Installation	300,000
Working capital	<u>400,000</u>
Initial investment	<u>\$1,900,000</u>

261. Correct answer d. Colvern's cash flow is \$22,800 as shown below.

After-tax cash savings:	\$28,400 x .6	=	\$17,040
Depreciation tax shield:	\$16,000 x .4	=	6,400
Loss of depreciation tax shield:	\$1,600 x .4	=	<u>640</u>
			<u>\$22,800</u>

262. Correct answer c. The first year cash flow for Skytop's project is \$67,000 as shown below.

Incremental cash inflows	\$75,000 x .6	=	\$45,000
Depreciation tax shield	(\$275,000 x .2) x .4	=	<u>22,000</u>
			<u>\$67,000</u>

263. Correct answer d. Year 0 cash outflows for Skytop total \$202,000 as shown below.

Sale of old equipment	\$ 80,000		New
equipment and installation	-275,000		
Additional A/R and inventory	- 30,000		
Additional accounts payable	+ 15,000		
Tax shield/loss on old equipment	<u>+ 8,000</u>	(\$100K - \$80K) x .4	
Cash outflow	<u>\$202,000</u>		

264. Correct answer c. The overall impact of Mintz's working capital investment is a net outflow of \$17,040 as shown below.

Working capital outflow at Time 0	\$40,000	
Working capital inflow at Time 5	<u>22,680</u>	(\$40,000 x .567)
Net outflow	<u>\$17,040</u>	

265. Correct answer b. A discounted cash flow analysis should not include sunk costs as they will not change and are not relevant. Changes in working capital and inflation affect future costs and should be included.

266. Correct answer b. AGC's initial investment is \$92,800 as shown below.

Sale of old equipment	\$ 3,000	
New equipment	-95,000	
Increase in accounts receivable	- 2,000	
Increase in accounts payable	+ 400	
Tax shield/Loss on sale	<u>+ 800</u>	(\$50,000 - \$45,000 - \$3,000) x .4
Cash outflow	<u>\$92,800</u>	

267. Correct answer c. Calvin's initial cash outflow is \$79,000 as shown below.

Sale of old equipment	\$ 25,000	
Purchase new equipment	-100,000	
Tax on gain from sale	<u>- 4,000</u>	(\$25,000 - \$15,000*) x .4
Cash outflow	<u>\$ 79,000</u>	

\*Accumulated depreciation (\$50,000 ÷ 10) x 7 = \$35,000  
Book value \$50,000 - \$35,000 = \$15,000

268. Correct answer d.

Revenue	\$ 1,200,000
Cash exp.	-300,000
Depreciation	<u>- 800,000</u>
Pretax Income	<u>\$ 100,000</u>
Tax at 40%	-40,000
Add back depreciation	<u>800,000</u>
	<u>860,000</u>
Sell land	800,000
Tax on gain /land	-120,000
Sell building	500,000
Tax on loss/building	200,000
Sell equipment	250,000
Tax on gain /equipment	<u>-100,000</u>
	<u>2,390,000</u>

269. Correct answer d. All of these items should be included in the initial investment as they all impact the cash flow of the project.

270. Correct answer b. Calvin's first year cash flow is \$24,000 as shown below.

After-tax cash savings	$\$30,000 \times .6$	\$18,000
Tax shield/new equipment	$(\$100,000 \div 5) \times .4$	8,000
Loss of old tax shield	$(\$50,000 \div 10) \times .4$	<u>2,000</u>
Cash outflow		<u>\$24,000</u>

271. Correct answer a. Using the real rate of 8%, the revenues are \$432,000. Using the nominal rate approach  $(8\% + 3\%) + (.03 \times .08)$ , the revenues are \$444,960.

272. Correct answer d. Kell's 3<sup>rd</sup> year cash flows are \$800,000 as shown below.

After tax cash inflows	$(\$8,000,000 - \$6,500,000 - \$500,000) \times .6$	\$600,000
Depreciation tax shield	$(\$1,500,000 \div 3) \times .4$	<u>200,000</u>
Cash inflow		<u>\$800,000</u>

273. Correct answer a. Both the operating costs and the required rate of return should be adjusted for inflation as inflation will affect both in the future.

274. Correct answer c. Regis would include the operating cash inflows plus the tax shield provided by the depreciation expense. The depreciation expense does not represent a cash transaction and, therefore, is not included.

275. Correct answer c. Atlantic would include the present value of the depreciation tax shield totaling \$34,840 as shown below.

Annual tax shield	$\$20,000 \times .4$	\$8,000
Present value @10%	$\$8,000 \times 4.355$	<u>\$34,840</u>

276. Correct answer c. Webster's net cash flow for Year 3 totals \$1,058,750 as shown below.

Unit price: $\$80 \times .95 = \$76 \times .95 = \$72.20$	
Labor cost: $\$20 \times 1.05 = \$21 \times 1.05 = \$22.05$	
Material cost: $\$30 \times 1.1 = \$33 \times 1.1 = \$36.30$	
Cash inflow: $[125,000 \times (\$72.20 - \$22.05 - \$36.30) - \$300,000] \times .6$	\$ 858,750
Depreciation tax shield: $(\$2,000,000 \div 4) \times .4$	<u>200,000</u>
Net cash flow for Year 3	<u>\$1,058,750</u>

277. Correct answer c. Skytop's after-tax cash flow for Year 5 is \$78,950 as shown below.

Cash inflow after tax	$\$75,000 \times .6$	\$45,000
Depreciation tax shield	$(\$275,000 \times .145) \times .4$	15,950
Sale of equipment		30,000
Less tax on \$30,000 gain @ 40%		<u>12,000</u>
Net cash flow		<u>\$78,950</u>

278. Correct answer a.  $\$1,000,000 \times .32 = \$320,000 \times .4 = \$128,000$

279. Correct answer b. The net present value method calculates the expected monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present point in time.

280. Correct answer b. The net present value of Kunkle's project will increase approximately \$219,000 as shown below.

Present value of current cash flow	=	$10,000 \times (\$100 - \$70) \times .6$
	=	$\$180,000 \times 5.216$
	=	\$938,880
Present value of reduced cash flow	=	$10,000 \times (\$100 - \$63) \times .6$
	=	$\$222,000 \times 5.216$
	=	\$1,157,952
Increase in net present value	=	$\$1,157,952 - \$938,880$
	=	\$219,072

281. Correct answer c. Allstar's initial investment is \$26,160 as shown below.

Present value of cash inflows	$\$9,000 \times 3.24$	=	\$29,160
Initial investment	$\$29,160 - \$3,000$	=	<u>\$26,160</u>

282. Correct answer a. Smithco's project has a net present value of \$(1,780) as shown below.

Year 0		\$(550,000)
Year 1	$\$(500,000) \times .877$	(438,500)
Year 2	$\$450,000 \times .769$	346,050
Year 3	$\$350,000 \times .675$	236,250
Year 4	$\$350,000 \times .592$	207,200
Year 5	$\$380,000^* \times .519$	<u>197,220</u>
Net present value		<u>\$ (1,780)</u>

\*Includes \$30,000 from sale of old equipment  
 $\$50,000 - (\$50,000 \times .4) = \$30,000$

283. Correct answer a. An investment decision is acceptable if the net present value is equal to or greater than zero because the return from the decision is equal to or exceeds the cost of capital.

284. Correct answer c. If Verla outsources the work, the net present value of the cash outflows is \$454,920  $[(\$200,000 \times .6) \times 3.791 = \$454,920]$ .

285. Correct answer b. The net present value of Long's project is \$283,380 as shown below.

Expected annual sales:  $(80,000 \times .1) + (85,000 \times .2) + (90,000 \times .3) + (95,000 \times .2) + (100,000 \times .1) + (110,000 \times .1) = 92,000$

Annual after-tax cash flow:  $(92,000 \times \$5) \times .6 = \$276,000$

Annual depreciation tax shield:  $(\$1,000,000 \div 5) \times .4 = \$80,000$

Net present value:  $= [(\$276,000 + \$80,000) \times 3.605] - \$1,000,000$   
 $= \$1,283,380 - \$1,000,000$   
 $= \underline{\$283,380}$

286. Correct answer c. The revised net present value for the tax shield is \$283,000 as shown below.

Year 1: $[(\$1,000,000 \times .3333) \times .4] \times .833$	\$111,056
Year 2: $[(\$1,000,000 \times .4445) \times .4] \times .694$	123,379
Year 3: $[(\$1,000,000 \times .1481) \times .4] \times .579$	34,300
Year 4: $[(\$1,000,000 \times .0741) \times .4] \times .482$	14,286
Net present value (to nearest thousand)	<u>\$283,000</u>

287. Correct answer a. The ranking of the scenarios from least effect on the net present value to the greatest effect is R, S, and T as shown below.

R: $[(\$800,000 \times .9) \times 3.605] - \$2,500,000$	\$95,000
S: $(\$800,000 \times 3.127) - \$2,500,000$	\$1,600
T: $(\$800,000 \times 3.037) - \$2,500,000$	\$(70,400)

288. Correct answer d. Ironside should accept both projects as Project R (less risk – more stable sales) at 12% has a positive net present value while Project S has a positive net present value at both hurdle rates.

Project R @12%  $= [(\$75,000 \times .1) + (\$95,000 \times .8) + (\$115,000 \times .1)] \times 5.650$   
 $= \$536,750 - \$500,000$   
 $= \$36,750$

Project S @16%  $= [(\$70,000 \times .25) + (\$110,000 \times .5) + (\$150,000 \times .25)] \times 4.833$   
 $= \$531,630 - \$500,000$   
 $= \$31,630$

289. Correct answer d. Logan should continue to operate as the company would suffer a greater loss by shutting down.

$$\begin{aligned}
 \text{Net present value of cash flow} &= [\$150,000 \div (\$100 - \$75)] - \$4,000,000 \\
 &= (\$250,000) \times 3.605 \\
 &= (\$901,250) \\
 \text{Cost of shutting down} &= \$750,000 - \$1,500,000 - \$500,000 \\
 &= (\$1,250,000)
 \end{aligned}$$

290. Correct answer b. The net present value of Foster's project is \$924 as shown below.

$$\begin{aligned}
 \text{Discounted cash flow} &= (\$6,000 \times .893) + (\$6,000 \times .797) + (\$8,000 \times .712) + (\$8,000 \times .636) \\
 &= \$20,924 \\
 \text{Less investment} &\quad \underline{20,000} \\
 &\quad \underline{\$ \quad 924}
 \end{aligned}$$

291. Correct answer d. The net present value of Lunar's project is \$16,600 as shown below.

After-tax cash flow (x .6)	\$30,000	\$30,000	\$240,000	\$240,000	\$240,000
Tax shield (\$500,000 ÷ 5) x .4	<u>40,000</u>	<u>40,000</u>	<u>40,000</u>	<u>40,000</u>	<u>40,000</u>
	\$70,000	\$70,000	\$280,000	\$280,000	\$280,000

$$\begin{aligned}
 \text{Net present value} &= (\$70,000 \times 1.528) + [\$280,000 \times (2.991 - 1.528)] - \$500,000 \\
 &= \$106,960 + \$409,640 - \$500,000 \\
 &= \underline{\$16,600} \approx \underline{\$16,530}
 \end{aligned}$$

292. Correct answer c. Using a 14% hurdle rate, Parker's project will not have a positive net present value until the annual cash flows are \$60,000 or higher (\$60,000 x 3.433 = \$205,980 - \$200,000 = \$5,980). As shown, the probability of the cash flows reaching \$60,000 or higher is 40%.

293. Correct answer a. Since the projects are mutually exclusive, Staten should accept Project X (higher net present value) and reject Project Y.

$$\begin{aligned}
 \text{Net present value Project X} &= (\$47,000 \times 3.791) - \$150,000 \\
 &= \$28,177 \\
 \text{Net present value Project Y} &= (\$280,000 \times .621) - \$150,000 \\
 &= \$23,880
 \end{aligned}$$

294. Correct answer d. The net present value of Verla acquiring the new equipment is \$434,424 net cash outflow as shown below.

Labor savings (\$100,000 x .6) x 3.791	\$227,460
Tax shield [(\$1,000,000 - \$50,000) ÷ 5] x .4 x 3.791	<u>288,116</u>
Cash inflow	\$515,576
Cash outflow (\$1,000,000 - \$50,000)	<u>950,000</u>
Net cash outflow	<u>\$434,424</u>



295. Correct answer d. Since Stennet's cost of capital is 10% and Project A has a higher net present value at a discount rate of 10%, Mack should recommend Project A. Since the projects are mutually exclusive, only one can be accepted.
296. Correct answer a. Delaying the cash outflow for a major overhaul from Year 4 to Year 5 will decrease its present value and result in an increase in the net present value of the project. All of the other options would result in a decrease the net present value.
297. Correct answer c. The internal rate of return method is easier to understand (interpret) than the net present value method. All of the other options are disadvantages of the internal rate of return method.
298. Correct answer d. Since the company has already evaluated the cash flows (net present value) of the project using a hurdle rate of 14%, the next logical step would be to compare the internal rate of return to the hurdle and the cost of capital.
299. Correct answer c. Hobart would accept the project under both the internal rate of return of 20% which exceeds the hurdle rate of 15% and the payback period of 2.7 years ( $\$200,000 \div \$74,000$ ) which is less than the company's 3-year benchmark.
300. Correct answer c. BGN Industries should select Option Z as it has the highest net present value ( $\$2,825,000 - \$2,000,000$ ) and the internal rate of return is greater than the hurdle rate.
301. Correct answer b. The internal rate of return is the discount rate that equates the present value of future net cash flows from an investment project with project's initial cash outflow.
302. Correct answer c. The approximate internal rates of return are 19.5% and 25.5% as shown.
- Project A:  $77 + 26 = 103$ ;  $77 \div 103 = .75\%$ ;  $.75\% \times 2 = 1.5\%$ ;  $18\% + 1.5\% = 19.5\%$   
 Project B:  $30 + 11 = 41$ ;  $30 \div 41 = .73\%$ ;  $.73\% \times 2 = 1.5\%$ ;  $24\% + 1.5\% = 25.5\%$
303. Correct answer c. The internal rate of return is the discount rate that equates the present value of future net cash flows from an investment project with project's initial cash outflow.
304. Correct answer c. Options a, b, and d are correct as shown below.

NPV Project A:  $\$100,000 - (\$40,000 \times .909) + (\$50,000 \times .826) + (\$60,000 \times .751) = \$22,720$

NPV Project B:  $\$150,000 - (\$80,000 \times .893) + (\$70,000 \times .797) + (\$40,000 \times .712) = \$19,950$

Payback Project A:  $\$100,000 - \$40,000 - \$50,000 = \$10,000 \div \$65,000 = .167$

.167 years + 2 years  $\approx$  2.2 years

Payback Project B:  $\$150,000 - \$80,000 - \$70,000 = 0$

Payback = 2 years

305. Correct answer c. The approximate internal rate of return is 9%. A net present value of zero is approximately half way between \$460 and (\$440) and 9% is half way between 8% and 10%.
306. Correct answer c. An internal rate of return equates Foster's cash flows to the initial investment as shown below.
- $$(\$6,000 \times .877) + (\$6,000 \times .769) + (\$8,000 \times .675) + (\$8,000 \times .592) = \$20,012$$
- Initial cash outflow of \$20,000  $\approx$  \$20,012
307. Correct answer d. Both the internal rate of return method and the net present value method utilize discounted flow techniques taking into consideration the time value of money. Payback and average rate of return do not consider the time value of money.
308. Correct answer d. Statements III and IV are correct. Since the company has no capital rationing, all projects with positive net present values will enhance the value of Molar. Projects with negative internal rates of return will cost more than they will return to the company and should be rejected.
309. Correct answer a. Since the net present value of the project is negative using a discount rate of 14%, it can be concluded that the internal rate of return is something less than 14%.
310. Correct answer c. Since the projects are mutually exclusive, Foggy Products can select only one, and the one selected should have the highest net present value. If both projects exceed the company's benchmark for payback period, they should both be rejected.
311. Correct answer a. The payback period does provide some insight into the risk of a project – the longer the payback period, the riskier the project. The other options are either incorrect or disadvantages of the payback method.
312. Correct answer c. Because the payback method calculates the time to return the project's initial investment, it does evaluate the project's liquidity. The other options are all drawbacks of the payback method.
313. Correct answer d. Quant's payback period is 3.7 years as shown below.

	<u>After-tax cash flow</u>	<u>Investment less cash flow</u>
Year 1	\$60,000 $\times$ .6 = \$36,000	\$104,000
Year 2	\$60,000 $\times$ .6 = \$36,000	68,000
Year 3	\$60,000 $\times$ .6 = \$36,000	32,000
Year 4	\$80,000 $\times$ .6 = \$48,000	\$32,000 $\div$ \$48,000 = .667
	Payback period = 3.7 years	

314. Correct answer c. The payback period for Foster's project is 3.0 years ( $\$20,000 - \$6,000 - \$6,000 - \$8,000 = 0$ ).

315. Correct answer d. Smithco's payback period is 4.0 years ( $\$550,000 + \$500,000 - \$450,000 - \$350,000 - \$250,000 = 0$ ).

316. Correct answer c. Earnings per share would increase \$.13 per share as shown below.

Sales	\$20,000,000	\$22,000,000	(increase 10%)
Contribution (30%)	6,000,000	6,600,000	
Less administrative	300,000	300,000	
Less commission (10%)	<u>2,000,000</u>	<u>2,200,000</u>	
Operating profit	3,600,000	4,000,000	
Interest expense	<u>400,000</u>	<u>400,000</u>	
Profit before tax	3,200,000	3,600,000	
Tax @35%	<u>1,120,000</u>	<u>1,260,000</u>	
Net income	<u>\$ 2,080,000</u>	<u>\$ 2,340,000</u>	
Earnings per share	<u>\$1.04</u>	<u>\$1.17</u>	(NI ÷ 2,000,000)

317. Correct answer c. Monte Carlo simulation is a quantitative technique that accounts for risk in decision making by generating a range of outcomes and associated probabilities.

318. Correct answer d. Start with the next available #; 25 multiples for demand of 4 and 10 multiples for demand of 5.

319. Correct answer c. The purpose of the simulation is not to generate an optimal solution. Rather it allows the analyst to model the behavior of a system and generates a range of different outcomes.

320. Correct answer c.  $45 - 15 = \text{interval of } 30$

12	20
18	30 (18-12= 6 days / interval of 30)
15	25
9	15
<u>6</u>	10
60	

## Section F: Professional Ethics

321. Correct answer d. In accordance with IMA's "Statement of Ethical Professional Practice", a member's failure to comply with the standards of competence, confidentiality, integrity and credibility may result in disciplinary action. Disclosing company's internal budget to an outside party is a breach of the ethical standard of confidentiality.



*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

# **CMA EXAM**

## ***Essay Questions***

For Practice

Parts 1 and 2

## **Introduction**

The Institute of Certified Management Accountants (ICMA) is publishing this book of practice questions with answers to help you prepare for the CMA examination. These questions are actual “retired” questions from the CMA exams and are intended to supplement other study materials.

These practice questions will help you test your understanding of the concepts and rules included in your CMA study materials by requiring you to apply those concepts and rules to unique and varying situations. You will encounter different scenarios and applications on your actual examination so it is essential that you understand the underlying concepts. In general, it will not be helpful to you to memorize particular questions.

Essay questions appear in both Part 1 and Part 2 of the CMA exam and combine topics from the part in which they appear. No inference should be made from the lack of practice questions in any topic areas.

The CMA Program is a rigorous test of your skills and capabilities and requires dedication to be successful. We hope that these practice questions will be a valuable resource as you pursue your goal of certification. Good luck!

## **CMA Part 1 Essay Practice Questions**

(Answers begin on Page 409 )

### **Question 1.1 – Coe Company**

Coe Company is a manufacturer of semi-custom motorcycles. The company used 500 labor hours to produce a prototype of a new motorcycle for one of its key customers. The customer then ordered three additional motorcycles to be produced over the next six months. Coe estimates that the manufacturing process for these additional motorcycles is subject to a 90% learning curve. Although the production manager was aware of the learning curve projections, he decided to ignore the learning curve when compiling his budget in order to provide a cushion to prevent exceeding the budgeted amount for labor.

#### **REQUIRED:**

1. By using the cumulative average-time learning curve, estimate the total number of labor hours that are required to manufacture the first four units of product. Show your calculations.
2. Assume the 90% learning curve is realized. Calculate Coe's cost savings in producing the three additional units if the cost of direct labor is \$25 per hour. Show your calculations.
3.
  - a. Define budgetary slack.
  - b. Identify and explain two negative effects that budgetary slack can have on the budgeting process.
4. Assume that Coe actually used 1,740 labor hours to produce the four units at a total cost of \$44,805.
  - a. If the company ignored the learning curve when creating the budget, for the four units produced, compute Coe's
    1. direct labor rate (price) variance.
    2. direct labor efficiency variance.
  - b. How would the above two variances differ if the learning curve had been considered when creating the budget? Show your calculations.
5. Assume that the price variance is unfavorable and the efficiency variance is favorable. Identify and discuss one reason that explains both of these variances.
6. Explain the effect on the direct labor efficiency variance if the manufacturing process were subject to an 80% learning curve.
7. Identify and explain one limitation of learning curve analysis.

### **Question 1.2 – Law Services Inc.**

Law Services Inc. provides a variety of legal services to its clients. The firm's attorneys each have the authority to negotiate billing rates with their clients. Law Services wants to manage its operations more effectively, and established a budget at the beginning of last year. The budget included total hours billed, amount billed per hour, and variable expense per hour. Unfortunately, the firm failed to meet its budgeted goals for last year. The results are shown below.

	<u>Actual</u>	<u>Budget</u>
Total hours billed	5,700	6,000
Amount billed/hour	\$275	\$325

The budgeted variable expense per hour is \$50, and the actual total variable expense was \$285,000. There is disagreement among the attorneys over the reasons that the firm failed to meet its budgeted goals.

#### **REQUIRED:**

1. What is the advantage of using a flexible budget to evaluate Law Services' results for last year as opposed to a static budget? Explain your answer.
2. Explain the process of creating a flexible budget for Law Services.
3. Calculate the total static budget revenue variance, the flexible budget revenue variance, and the sales-volume revenue variance. Show your calculations.
4.
  - a. Calculate the variable expense variance. Show your calculations.
  - b. Was the variable expense variance a flexible budget variance or a sales volume variance? Explain your answer.

### **Question 1.3 – Inman Inc.**

Inman Inc. is a manufacturer of a single product and is starting to develop a budget for the coming year. Because cost of goods manufactured is the biggest item, Inman's senior management is reviewing how costs are calculated. In addition, senior management wants to develop a budgeting system that motivates managers and other workers to work toward the corporate goals. Inman has incurred the following costs to make 100,000 units during the month of September.

Materials	\$400,000
Direct labor	100,000
Variable manufacturing overhead	20,000
Variable selling and administrative costs	80,000
Fixed manufacturing overhead	200,000
Fixed selling and administrative costs	300,000

Inman Inc.'s September 1 inventory consisted of 10,000 units valued at \$72,000 using absorption costing. Total fixed costs and variable costs per unit have not changed during the past few months. In September, Inman sold 106,000 units at \$12 per unit.

#### **REQUIRED:**

1. Using absorption costing, calculate the following.
  - a. Inman's September manufacturing cost per unit
  - b. Inman's September 30 inventory value
  - c. Inman's September net income
2. Using variable costing, calculate the following.
  - a. Inman's September manufacturing cost per unit
  - b. Inman's September 30 inventory value
  - c. Inman's September net income
3. Identify and explain one reason why the income calculated in the previous two questions might differ.
4. Identify and discuss one advantage of using each of the following:
  - a. absorption costing
  - b. variable costing
5.
  - a. Identify one strength and one weakness each of authoritative budgeting and participative budgeting.
  - b. Which of these budgeting methods will work best for Inman Inc.? Explain your answer.
  - c. Identify and explain one method the top managers can take to restrict the Production Manager from taking advantage of budgetary slack.



### **Question 1.4 – Smart Electronics:**

Smart Electronics manufactures two types of gaming consoles, Models M-11 and R-24. Currently, the company allocates overhead costs based on direct labor hours; the total overhead cost for the past year was €80,000. Additional cost information for the past year is presented below.

Product Name	Total Direct Labor Hours Used	Units Sold	Direct Costs per Unit	Selling Price per Unit
M-11	650	1,300	€10	€90
R-24	150	1,500	€30	€60

Recently, the company lost bids on a contract to sell Model M-11 to a local wholesaler and was informed that a competitor offered a much lower price. Smart's controller believes that the cost reports do not accurately reflect the actual manufacturing costs and product profitability for these gaming consoles. He also believes that there is enough variation in the production process for Models M-11 and R-24 to warrant a better cost allocation system. Given the nature of the electronic gaming market, setting competitive prices is extremely crucial. The controller has decided to try activity-based costing and has gathered the following information.

	Number of Setups	Number of Components	Number of Material Movements
M-11	3	17	15
R-24	7	33	35
Total activity cost	€20,000	€50,000	€10,000

The number of setups, number of components, and number of material movements have been identified as activity-cost drivers for overhead.

#### **REQUIRED:**

1. Using Smart's current costing system, calculate the gross margin per unit for Model M-11 and for Model R-24. Assume no beginning or ending inventory. Show your calculations.
2. Using activity-based costing, calculate the gross margin for Model M-11 and for Model R-24. Assume no beginning or ending inventory. Show your calculations.
3. Describe how Smart Electronics can use the activity-based costing information to formulate a more competitive pricing strategy. Be sure to include specific examples to justify the recommended strategy.
4. Identify and explain two advantages and two limitations of activity-based costing.

### **Question 1.5 – Ace Contractors**

Ace Contractors is a large regional general contractor. As the company grew, Eddie Li was hired as the controller and tasked with analyzing the monthly income statements and reconciling all of the accounts formerly handled by Susan Zhao, the sole accounting associate. Li noticed a large amount of demolition expense for February, even though no new projects had started over the past few months. Since Li did not expect such a large amount of demolition expense, nor was any of this type of expense budgeted, Li dug a little deeper. He found that all of those expenses were bank transfers into another bank account. After additional research, it became evident that Zhao had been transferring funds out of the company bank account and into her own, and recording fake expenses to make the bank account reconciliation work. While the president kept the prenumbered checks locked up until check run time and signed all of the outgoing checks, he was unaware of the ability to initiate transfers via the internet. Li had also reviewed the bank reconciliations, which were completed by the office manager, and this fraud was not evident since the ending balance was reasonable.

#### **REQUIRED:**

1.
  - a. Identify and explain the four types of functional responsibilities that should be segregated properly.
  - b. Identify and explain two incompatible duties that Zhao had that allowed her to take company funds.
2. Identify and explain two ways that the company had attempted to safeguard its assets and suggest two ways to strengthen controls in this area.
3. Refer to COSO's Internal Control Framework to answer the following questions.
  - a. Identify and describe the three objectives of internal control.
  - b. Identify and describe five components of internal controls.
4. Identify and explain three ways internal controls provide reasonable assurance.

### **Question 1.6 - SmallParts**

SmallParts is a manufacturer of metal washers, screws, and other parts required in the manufacture of various handmade craft and novelty items. The firm has the ability to custom make virtually any small part, provided the client is able to provide SmallParts with the dimensions and tolerance required of the product. Because of its niche in the market, SmallParts has over 1,000 clients. Unfortunately, many of its small business clients eventually merge or cease operations. One of the company's biggest challenges is the return of shipped product. Usually, this is because the small business client has ceased operations. While most of the product is custom made, SmallParts has found that much of it can be sold to other clients for adapted use. The company's accountant is reviewing the company's internal controls and financial accounting procedures, in particular, with respect to inventory.

Currently, SmallParts has one salesperson responsible for marketing returned product. This salesperson has exclusive and total control over the returned product including arranging of sales terms, billing, and collection. The salesperson receives the returned product and attempts to find a client who may be able to adapt the product for the client's use. The inventory of returned product is not entered in the accounting records, under the logic that the cost is sunk. Revenue generated from its sale is classified as other revenue on the SmallParts income statement.

#### **REQUIRED:**

1. Identify and describe the three objectives of a system of internal control.
2. Identify and explain three ways that the procedure for handling returned product violates the internal control system of segregation of duties.
3. Identify four functional responsibilities within an organization that should be separated. Explain why these responsibilities should be separated.
4. Identify and describe three ways that SmallParts can provide for better internal control over its inventory of returned product.

**Question: 1.7 – Michael Hanson**

Michael Hanson is an internal auditor who has been asked to evaluate the internal controls and risks of his company, Consolidated Enterprises Inc. He has been asked to present recommendations to senior management with respect to Consolidated's general operations with particular attention to the company's database procedures. With regard to database procedures, he was specifically directed to focus attention on (1) transaction processing, (2) virus protection, (3) backup controls, and (4) disaster recovery controls.

**REQUIRED:**

1. Define the objectives of
  - a. a compliance audit.
  - b. an operational audit.
2. For each of the areas shown below, identify two controls that Hanson should review and explain why.
  - a. Transaction processing.
  - b. Virus protection.
  - c. Backup controls.
3. Identify four components of a sound disaster recovery plan.
4. During his evaluation of general operations, Hanson found the following conditions.
  - a. Daily bank deposits do not always correspond with cash receipts.
  - b. Physical inventory counts sometimes differ from perpetual inventory records, and there have been alterations to physical counts and perpetual records.
  - c. An unexplained and unexpected decrease in gross profit percentage has occurred.

For each of these conditions, (1) describe a possible cause of the condition and (2) recommend actions to be taken and/or controls to be implemented that would correct the condition.

### **Question 1.8 – Brawn Technology**

Brawn Technology, Inc. is a manufacturer of large wind energy systems. The company has its corporate headquarters in Buenos Aires and a central manufacturing facility about 200 miles away. Since the manufacturing facility is so remote, it does not receive the attention or the support from the staff that the other units do. The president of Brawn is concerned about whether proper permits have been issued for new construction work being done to handle industrial waste at the facility. In addition, he wants to be sure that all occupational safety laws and environmental issues are being properly addressed. He has asked the company's internal auditor to conduct an audit focusing on these areas of concern.

#### **REQUIRED:**

1. Identify and describe the two fundamental types of internal audits. Using examples, describe two situations where each type of audit would be applicable.
2. Referring to Brawn Technology,
  - a. identify the type of audit that would best address the concerns of the president .
  - b. identify the objective of this audit.
  - c. give two reasons why this type of audit would best address the concerns of the president.
3. Recommend two procedures that could be implemented at Brawn's manufacturing plant that would lessen the president's concerns. Explain each of your recommendations.

### **Question 1.9 - Thompson**

Klein, Thompson's CFO, has determined that the Motor Division has purchased switches for its motors from an outside supplier during the current year rather than buying them from the Switch Division. The Switch Division is operating at full capacity and demanded that the Motor division pay the price charged to outside customers rather than the actual full manufacturing costs as it has done in the past. The Motor Division refused to meet the price demanded by the Switch Division. The Switch Division contracted with an outside customer to sell its remaining switches and the Motor division was forced to purchase the switches from an outside supplier at an even higher price.

Klein is reviewing Thompson's transfer pricing policy because she believes that sub-optimization has occurred. While Klein believes the Switch Division made the correct decision to maximize its divisional profit by not transferring the switches at actual full manufacturing cost, this decision was not necessarily in the best interest of Thompson.

Klein has requested that the corporate Accounting Department study alternative transfer pricing methods that would promote overall goal congruence, motivate divisional management performance, and optimize overall company performance. The three transfer pricing methods being considered are listed below. One of these methods will be selected, and will be applied uniformly across all divisions.

- Standard full manufacturing costs plus markup.
- Market selling price of the products being transferred.
- Outlay (out-of-pocket) costs incurred to the point of transfer plus opportunity cost per unit.

#### **REQUIRED:**

1. Identify and explain two positive and two negative behavioral implications that can arise from employing a negotiated transfer price system for goods that are exchanged between divisions.
2. Identify and explain two behavioral problems that can arise from using actual full (absorption) manufacturing costs as a transfer price.
3. Identify and explain two behavioral problems most likely to arise if Thompson Corporation changes from its current transfer pricing policy to a revised transfer pricing policy that it applies uniformly to all divisions.
4. Discuss the likely behavior of both "buying" and "selling" divisional managers for each of the following transfer pricing methods being considered by Thompson Corporation.
  - a. Standard full manufacturing costs plus markup.
  - b. Market selling price of the products being transferred
  - c. Outlay (out-of-pocket) costs incurred to the point of transfer plus opportunity cost per unit.

### **Question 1.10 – Biscayne Industries**

Biscayne Industries manufactures tents in a variety of sizes by using a variety of materials. Last year's income statement data is shown below.

Sales (100,000 units sold)	\$50,000,000
Cost of goods sold (2/3 fixed)	<u>30,000,000</u>
Gross profit	20,000,000
Selling and administrative costs (all fixed)	<u>12,000,000</u>
Operating income	<u>\$ 8,000,000</u>

Biscayne did not foresee any changes for this year, so it created a master budget that was the same as last year's actual results. At the end of this year, however, Biscayne's sales totaled \$55,000,000. There were no variable cost variances, and the company's operating income was \$7,500,000.

#### **REQUIRED:**

1. Identify and explain three benefits of using a flexible budget.
2. Prepare Biscayne's flexible budget through operating income, at the \$55,000,000 sales level.
3. Identify and explain three possible reasons Biscayne's sales increased, but the company's operating income decreased.
4. Define zero-based budgeting.

### **Question 1.11 – Brown Printing**

Brown Printing, a small family-owned business, began operations on March 1, manufacturing premium quality books. The owners have expertise in printing but no accounting knowledge or experience. The company's independent accountant compiled the following data for the month of March. They have also requested an income statement.

Sales price	\$90 per book
Number of units produced	15,000 books
Number of units sold	10,000 books
Direct materials cost	\$15 per book
Direct labor cost	\$6 per book
Variable manufacturing overhead	\$4 per book
Fixed manufacturing overhead	\$240,000 per month
Selling cost	3 per book
Administrative expenses	\$160,000 per month

The owners want to understand these numbers and how they can use the information to run the business.

#### **REQUIRED:**

1. Define and explain absorption costing and variable costing.
2.
  - a. Calculate the unit cost of goods sold using variable costing.
  - b. Prepare the income statement for March using variable costing.
3.
  - a. Calculate the unit cost of goods sold using absorption costing.
  - b. Prepare the income statement for March using absorption costing.
4.
  - a. Identify and describe two advantages of using variable costing.
  - b. Identify and describe two limitations of using absorption costing.
5. Explain why there is a difference in net income between variable costing and absorption costing. Show your calculations.
6. Define and explain throughput costing.



### **Question 1.12 - TruJeans**

TruJeans, a new startup company, plans to produce blue jean pants, customized with the buyer's first name stitched across the back pocket. The product will be marketed exclusively via an internet website. For the coming year, sales have been projected at three different levels: optimistic, neutral, and pessimistic. TruJeans does keep inventory on hand, but prefers to minimize this investment.

The controller is preparing to assemble the budget for the coming year, and is unsure about a number of issues, including the following.

- The level of sales to enter into the budget.
- How to allocate the significant fixed costs to individual units.
- Whether to use job order costing or process costing.

In addition, the controller has heard of kaizen budgeting and is wondering if such an approach could be used by TruJeans.

#### **REQUIRED:**

1. How can the controller use the expected value approach to set the sales level for the budget? What additional information would be needed?
2. How could the use of variable (direct) costing mitigate the problem of how to allocate the fixed costs to individual units?
3. Which cost system seems to make more sense for TruJeans, job order costing or process costing? Explain your answer.

### **Question 1.13 – Sonimad Sawmill**

Sonimad Sawmill Inc. (SSI) purchases logs from independent timber contractors and processes the logs into the following three types of lumber products.

- Studs for residential building (e.g., walls, ceilings).
- Decorative pieces (e.g., fireplace mantels, beams for cathedral ceilings).
- Posts used as support braces (e.g., mine support braces, braces for exterior fences around ranch properties).

These products are the result of a joint sawmill process that involves removal of bark from the logs, cutting the logs into a workable size (ranging from 8 to 16 feet in length), and then cutting the individual products from the logs, depending upon the type of wood (pine, oak, walnut, or maple) and the size (diameter) of the log. The joint process results in the following costs and output of products for a typical month.

Joint production costs:

Materials (rough timber logs)	\$ 500,000
Debarking (labor and overhead)	50,000
Sizing (labor and overhead)	200,000
Product cutting (labor and overhead)	<u>250,000</u>
Total joint costs	<u>\$1,000,000</u>

Product yield and average sales value on a per unit basis from the joint process are as follows.

<u>Product</u>	<u>Monthly Output</u>	<u>Fully Processed Sales Price</u>
Studs	75,000	\$ 8
Decorative pieces	5,000	100
Posts	20,000	20

The studs are sold as rough-cut lumber after emerging from the sawmill operation without further processing by SSI. Also, the posts require no further processing. The decorative pieces must be planed and further sized after emerging from the SSI sawmill. This additional processing costs SSI \$100,000 per month and normally results in a loss of 10% of the units entering the process. Without this planning and sizing process, there is still an active intermediate market for the unfinished decorative pieces where the sales price averages \$60 per unit.

#### **REQUIRED:**

1. Based on the information given for Sonimad Sawmill Inc., allocate the joint processing costs of \$1,000,000 to each of the three product lines using the
  - a. relative sales value method at split-off.
  - b. physical output (volume) method at split-off.
  - c. estimated net realizable value method.
2. Prepare an analysis for Sonimad Sawmill Inc. to compare processing the decorative pieces further as they presently do, with selling the rough-cut product immediately at split-off and recommend which action the company should take. Be sure to provide all calculations.

### **Question 1.14 – Lawton Industries**

For many years, Lawton Industries has manufactured prefabricated houses where the houses are constructed in sections to be assembled on customers' lots. The company expanded into the pre-cut housing market in 2006 when it acquired Presser Company, one of its suppliers. In this market, various types of lumber are pre-cut into the appropriate lengths, banded into packages, and shipped to customers' lots for assembly. Lawton decided to maintain Presser's separate identity and, thus, established the Presser Division as an investment center of Lawton.

Lawton uses return on average investment (ROI) as a performance measure the investment defined as operating assets employed. Management bonuses are based in part on ROI. All investments in operating assets are expected to earn a minimum return of 15% before income taxes. Presser's ROI has ranged from 19.3% to 22.1% since it was acquired in 2006. The division had an investment opportunity in the year just ended that had an estimated ROI of 18% but Presser's management decided against the investment because it believed the investment would decrease the division's overall ROI.

Presser's operating statement for the year just ended is presented below. The division's operating assets employed were \$12,600,000 at the end of the year, a 5% increase over the balance at the end of the previous year.

Presser Division Operating Statement  
For the Year Ended December 31  
(\$000 omitted)

Sales revenue		\$24,000
Cost of goods sold		<u>15,800</u>
Gross profit		\$ 8,200
Operating expenses		
Administrative	\$2,140	
Selling	<u>3,600</u>	<u>5,740</u>
Income from operations before income taxes		<u>\$ 2,460</u>

#### **REQUIRED:**

1. Calculate the following performance measures for the year just ended for the Presser Division of Lawton Industries.
  - a. Return on average investment in operating assets employed (ROI).
  - b. Residual income calculated on the basis of average operating assets employed.
2. Would the management of Presser Division have been more likely to accept the investment opportunity it had during the year if residual income were used as a performance measure instead of ROI? Explain your answer.
3. The Presser Division is a separate investment center with Lawton Industries. Identify and describe the items Presser must control if it is to be evaluated fairly by either the ROI or residual income performance measures.

### **Question 1.15 – Standard Lock**

Ted Crosby owns Standard Lock Inc., a small business that manufactures metal door handles and door locks. When he first started the company, Crosby managed the business by himself, overseeing purchasing and production, as well as maintaining the financial records. The only employees he hired were production workers.

As the business expanded, Crosby decided to hire John Smith as the company's financial manager. Smith had an MBA and ten years of experience in the finance department of a large company. During the interview, Smith mentioned that he was considering an offer from another company and needed to know of Crosby's decision within the next couple of days. Since Crosby was extremely impressed with Smith's credentials, he offered him the job without conducting background checks. Smith seemed to be a dedicated and hard-working employee. His apparent integrity quickly earned him a reputation as an outstanding and trusted manager.

Later in the year, Crosby hired another manager, Joe Fletcher, to oversee the production department. Crosby continued to take care of purchasing and authorized all payments. Fletcher was highly qualified for the position and seemed to be reliable and conscientious. After observing Fletcher's work for one year, Crosby concluded that he was performing his duties efficiently. Crosby believed that Fletcher and Smith were both good managers whom he could trust and gave them expanded responsibilities. Fletcher's additional responsibilities included purchasing and receiving; Smith paid all the bills, prepared and signed all checks, maintained records, and reconciled the bank statements.

Soon Crosby began taking a hands-off approach to managing his business. He frequently took long vacations with his family and was not often at the office to check on the business. He was pleased that the company was profitable and expected that it would continue to be profitable in the future under the supervision of two qualified and trusted managers. One year after Crosby left the management of the company to Smith and Fletcher, business began to experience a decline in profits. Crosby assumed that it was due to a cyclical downturn in the economy. When Standard continued to decline even as the economy improved, Crosby began to investigate. He noticed that revenues were increasing but profits were declining. He also discovered that purchases from one vendor had increased significantly as compared to the other five vendors. Crosby is concerned that fraud may be occurring in the company.

#### **REQUIRED:**

1. Identify and describe four internal control deficiencies within Standard Lock Inc.
2. **For each of the internal control deficiencies identified, recommend an improvement in procedures that would mitigate these deficiencies.**
3. If the company were to implement an ideal internal control system, can it guarantee that fraud would not occur in future? Explain your answer.

### **Question 1.16 – SieCo**

SieCo is a sheet metal manufacturer whose customers are mainly in the automobile industry. The company's chief engineer, Steve Simpson, has recently presented a proposal for automating the Drilling Department. The proposal recommended that SieCo purchase from Service Corp. two robots that would have the capability of replacing the eight direct labor workers in the department. The cost savings in the proposal included the elimination of the direct labor costs plus the elimination of manufacturing overhead cost in the Drilling Department as SieCo charges manufacturing overhead on the basis of direct labor costs using a plant-wide rate.

SieCo's controller, Keith Hunter, gathered the information shown below in Exhibit 1 to discuss the issue of overhead application at the management meeting at which the proposal was approved.

#### **EXHIBIT 1**

Date	Average Annual Direct Labor Cost	Average Annual Manufacturing Overhead Cost	Average Manufacturing Overhead Rate
Current Year	\$4,000,000	\$20,000,000	500%

Category	Cutting Department	Grinding Department	Drilling Department
Average Annual Direct Labor	\$ 2,000,000	\$1,750,000	\$ 250,000
Average Annual Overhead Cost	11,000,000	7,000,000	2,000,000

#### **REQUIRED:**

1. Using the information from Exhibit 1, describe the shortcomings of the system for applying overhead that is currently used by SieCo.
2. Recommend two ways to improve SieCo's method for applying overhead in the Cutting and Grinding Departments.
3. Recommend two ways to improve SieCo's method for applying overhead to accommodate the automation of the Drilling Department.
4. Explain the misconceptions underlying the statement that the manufacturing overhead cost in the Drilling Department would be reduced to zero if the automation proposal were implemented.

### **Question 1.17 – Giga**

Giga Industries is a large publicly-held manufacturer of telecommunications equipment. The firm developed the following forecast for the upcoming year.

#### **Balance Sheet (thousands of dollars)**

Current assets		\$100,000
Fixed assets	750,000	
Accumulated depreciation	<u>200,000</u>	
Net fixed assets		<u>550,000</u>
TOTAL ASSETS		<u>\$650,000</u>
Current liabilities		\$50,000
Long-term debt		150,000
Shareholders' equity		
Preferred stock	50,000	
Common – par of \$2	100,000	
Common – premium	200,000	
Retained earnings	100,000	
		<u>450,000</u>
TOTAL LIABILITIES & EQUITY		<u>\$650,000</u>

#### **Income Statement (thousands of dollars)**

Revenue	\$2,000,000
Depreciation expense	50,000
Other expenses	<u>1,775,000</u>
Earnings before interest & taxes	175,000
Interest expense	15,000
Taxes (40% effective rate)	<u>64,000</u>
Net income	<u>96,000</u>
Preferred stock dividends	<u>5,000</u>
Earnings for common stock	\$ <u>91,000</u>

The Product Development Team has developed a new line of state-of-the-art switching devices and is proposing a major capital investment of \$200 million for a new division of the firm that will manufacture and sell the new line. An extensive financial analysis was prepared using estimates for each year of the estimated 10-year product life and presented to the Board of Directors indicating that the project would result in a positive net present value (NPV) of \$60 million and an internal rate of return (IRR) of 25%. A board member commented that the project looked very promising but expressed concern about the impact on earnings. The Controller was asked to develop a revised forecast for the coming year assuming the project was approved.

**REQUIRED:**

1. You are preparing the revised forecast for the Controller. For each of the following assumptions show the Balance Sheet and/or Income Statement account that would be affected, the amount of the change and if the change increases or decreases the account. Assume no flotation costs on all financing.
  - a. The \$200 million investment in fixed assets will be made on January 1 and will be depreciated on a 10-year straight-line basis for financial statement and income tax purposes.
  - b. On January 1, \$75 million of 10-year bonds will be issued at par with annual interest of 10% payable December 31 with principle to be repaid at maturity.
  - c. On January 1, \$25 million of Preferred Stock will be issued with an annual dividend rate of 14% payable December 31.
  - d. On January 1, 4 million new shares of common stock will be issued to net the firm \$25 per share. Common stock dividends are expected to be \$0.50 payable December 31, as in the original forecast.
  - e. During the initial year of operation, the new product is expected to produce cash revenue of \$60 million and have cash expenses (other than depreciation) of \$30 million.
2. Assume the tax rate is expected to remain at 40% and taxes are paid on December 31, calculate the change in net income resulting from the transactions in question A.

### **Question 1.18 – Borealis Industries**

Borealis Industries has three operating divisions – Sandstone Books, Corus Games, and Sterling Extraction Services. Each division maintains its own accounting system and method of revenue recognition.

#### **Sandstone Books**

Sandstone Books sells novels to regional distributors who then sell to independent bookstores and retail chains in their territory. The distributors are allowed to return up to 25% of their purchases to Sandstone, and the distributors have the same return allowance with the bookstores. The returns from distributors have averaged 20% over the past five years. During the fiscal year just ended, Sandstone's sales to distributors totaled \$15,000,000. At year end, \$6,800,000 of sales are still subject to return privileges over the next six months. The balance of the book sales, \$8,200,000, had actual returns of 19%. Sales from the previous fiscal year totaling \$5,500,000 were collected in the current fiscal year, with 21% of sales returned. Sandstone records revenue in accordance with the method referred to as revenue recognition when the right of return exists as the company's operations meet all the applicable criteria for use of this method.

#### **Corus Games**

Corus Games supplies video arcades with new games and updated versions of standard games. The company works through a network of sales agents in various cities. Orders are received from the sales agents along with down payments; Corus then ships the product directly to the customer, f.o.b. shipping point. The customer is billed for the balance due plus the actual shipping costs. During the fiscal year just ended, Corus received orders for \$12,000,000 from the sales agents along with \$1,200,000 in down payments. Customers were billed \$150,000 in freight costs and \$9,180,000 for goods shipped. After an order has been shipped, the sales agent receives a 12% commission on the product price. The goods are warranted for 90 days after sales, and warranty returns have been about 3% of sales. Corus recognizes revenue at the point of sale.

#### **Sterling Extraction Services**

Sterling specializes in the extraction of precious metals. During the fiscal year just ended, Sterling entered into contracts worth \$36,000,000 and shipped metals worth \$32,400,000. One quarter of the shipments was made from inventories on hand at the beginning of the year, and the remaining shipments were made from metals that were mined during the year. Sterling uses the completion-of-production method to recognize revenue, because the operations meet the specified criteria, i.e., reasonably assured sales prices, interchangeable units, and insignificant distribution costs.

### **REQUIRED:**

1. Define the two conditions that must be present for proper revenue recognition, according to the revenue recognition principle.
2. Define and describe each of the following revenue recognition methods.
  - a. Percentage-of-completion method.
  - b. Installment-sales method.



3. Calculate the revenue to be recognized at the end of the fiscal year for
  - a. Sandstone Books.
  - b. Corus Games.
  - c. Sterling Extraction Services.

### **Question 1.19 – Bellaton**

Bellaton Industries is a manufacturing company located in Europe that has just completed the first month of a new fiscal year. The Finance Department is reviewing the variances of actual results to the master budget. The expenditures within the Marketing and Facilities departments make up the majority of the fixed costs. The Sales Operations Department is responsible for revenue. The actual results and master budget are shown below.

	<u>Actual</u>	<u>Master Budget</u>
Units sold	18,000	16,000
Revenues	€1,512,000	€1,360,000
Variable costs		
Direct materials	(792,000)	(672,000)
Direct labor	(252,000)	(240,000)
Variable overhead	<u>(144,000)</u>	<u>(128,000)</u>
Contribution margin	324,000	320,000
Fixed costs	<u>(210,000)</u>	<u>(215,000)</u>
Operating income	<u>€ 114,000</u>	<u>€ 105,000</u>

### **REQUIRED:**

1. Prepare a flexible budget based on the actual sales volume.
2.
  - a. Calculate the flexible-budget variance by comparing actual results to the flexible budget.
  - b. Explain the significance of these variances.
3.
  - a. Identify and describe three benefits of measuring performance by comparing actual results to the master budget.
  - b. Identify and describe one limitation of measuring performance by comparing actual results to the master budget.
4.
  - a. Identify and describe the different types of responsibility centers.
  - b. Identify the responsibility centers in the scenario.
5. Explain the difference between the sales-volume variance for operating income and the sales-price variance.

### **Question 1.20 – Ecoclock**

Ecoclock manufactures four environmentally friendly consumer products, and the firm is organized as four operating centers, each responsible for a single product. The main mechanism of each product is the same and requires an identical initial processing step, although subsequent processing for each product is very different. Ecoclock's management has decided to centralize the initial processing function and purchase new equipment that has a 40,000 unit annual practical capacity. For budgeting and costing purposes, the initial processing function will be assigned to a new center, Center E. Shown below is the budgeted production for the product centers.

	<u>Annual Production</u>
Center A	5,000
Center B	7,500
Center C	4,000
Center D	6,000

A large part of the managers' compensation is derived from bonuses that they receive for meeting or exceeding cost targets. The managers of centers A through D each agree that they should be charged with the variable costs per unit that are delivered by Center E. However, they disagree about the allocation of the fixed costs of Center E, primarily because they believe that the new equipment has a much larger capacity than is necessary and they do not want to be charged with the cost of the unused capacity. The fixed costs for Center E total \$150,000, while the variable cost per unit is \$6.

#### **REQUIRED:**

1. Assume fixed costs are allocated based on the proportion of units produced by each center. What is Center D's per unit cost?
2. What would be Center A's per unit cost if Center E's fixed costs are allocated based on practical capacity?
3. Although allocating Center E's fixed costs on a per-unit produced basis seems equitable, the manager of Center C is worried about Center B reducing the number of units produced.
  - a. Calculate Center C's per unit cost with no change in production.
  - b. If Center B reduces the number of units produced to 5,000, will Center C's cost increase or decrease and by how much?
4. The center managers are concerned that being charged for unused capacity will impact their bonus.
  - a. Explain how company management could alleviate the concerns.
  - b. Identify three additional measures that could be used to evaluate manager performance.

### **Question 1.21 - Edge**

Edge Products is a global supplier of medical products. They have one primary product which is manufactured in the United States, and two overseas subsidiaries which produce two key supplies for the primary product. Both subsidiaries also sell these supplies to other companies. The U.S. operation purchases the two supplies internally using transfer pricing. The supplies are of the same quality as any available from other suppliers and there would be no benefit to purchasing the supplies outside of the company. The market for the supplies is very competitive and prices are stable. For performance purposes, the U.S. operation is evaluated by department, such as marketing, IT, and sales, while the overseas operations are smaller and evaluated as a whole.

#### **REQUIRED:**

1.
  - a. Define transfer pricing.
  - b. Identify the objectives of transfer pricing.
2.
  - a. Identify the methods for determining transfer prices.
  - b. Explain the advantages and disadvantages of each method.
  - c. Based on the scenario, which method should this company select? Explain your answer.
3. How could tariffs, customs duties, or taxes affect transfer pricing and related performance evaluation in this multinational company?
4. Identify and explain the four different types of responsibility centers.

### **Question 1.22 - Zavod**

Zavod Inc. produces a single product and utilizes a standard cost system. Zavod has budgeted production costs for its first year of operations based on normal capacity of 11,000 units per year. The production budget includes the following costs.

Direct materials	\$4.00 per finished unit
Direct labor	\$3.25 per finished unit
Variable manufacturing overhead	\$1.15 per finished unit
Fixed manufacturing overhead	\$2.85 per finished unit

In addition, Zavod has variable selling and administrative costs of \$5.00 per unit and fixed selling and administrative costs of \$81,000.

During the year, Zavod produced 11,000 units and sold 10,000 units at \$32 each. All variable costs were exactly as expected on a per unit basis, and all fixed costs were exactly as expected in total. Zavod's president has asked the controller to prepare an income statement under absorption costing and an income statement under variable costing.

#### **REQUIRED:**

1. Explain how absorption costing and variable costing methods treat the following costs:
  - a. Direct materials.
  - b. Direct labor.
  - c. Variable overhead.
  - d. Fixed overhead.
  - e. Variable selling and administrative.
  - f. Fixed selling and administrative.
2.
  - a. Calculate the unit cost to be used in valuation of the ending inventory under absorption costing. Show your calculations.
  - b. Calculate the unit cost to be used in valuation of the ending inventory under variable costing. Show your calculations.
3.
  - a. Calculate operating income using absorption costing. Show your calculations.
  - b. Calculate operating income using variable costing. Show your calculations.
4. Explain why operating income calculated under absorption costing differs from operating income calculated under variable costing.
5.
  - a. Explain why absorption costing is required under U.S. GAAP.
  - b. Explain why variable costing is more appropriate for management decision-making.

## **CMA Part 2 Essay Practice Questions**

(Answers begin on Page 435 )

### **Question: 2.1 – Foyle Inc.**

Foyle Inc. has prepared the comparative income statements for the three most recent fiscal years that are shown below. While profitable, Foyle has been losing market share and is concerned about future performance. Also presented are data about Foyle's largest competitor and the industry average.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Competitor</u>	<u>Ind. Avg.</u>
Revenue	\$20,000	\$24,000	\$30,000	\$45,000	\$28,000
Cost of goods sold	12,000	12,000	18,000	21,600	14,000
Gross profit	8,000	12,000	12,000	23,400	14,000
Sales and marketing	2,000	2,000	2,000	5,000	3,000
General and administrative	1,500	2,000	3,000	3,150	2,500
Research and development	1,500	2,000	1,000	4,000	1,500
Operating income	<u>\$ 3,000</u>	<u>\$ 6,000</u>	<u>\$ 6,000</u>	<u>\$11,250</u>	<u>\$ 7,000</u>

### **REQUIRED:**

- Using the three Foyle Inc. statements,
  - Prepare a comparative common-size statement using revenue as the base measure.
  - Prepare a common base-year income statement using Year 1 as the base year.Show your calculations.
- Calculate Foyle's growth rate of both revenue and operating income for Year 2 and Year 3. Show your calculations.
- By evaluating Foyle's performance against the performance of Foyle's largest competitor and the industry average, identify and discuss three areas that Foyle should target for further investigation and performance improvement. Support your discussion with data.

**Question: 2.2 – Bockman Industries**

Income statements for Bockman Industries, a retailer, are shown below for the past two years.

	<u>Year 2</u>	<u>Year 1</u>
Revenues	\$6,400,000	\$6,000,000
Cost of goods sold	<u>3,100,000</u>	<u>2,850,000</u>
Gross margin	3,300,000	3,150,000
Selling expenses	950,000	880,000
Administrative expenses	1,120,000	1,050,000
Loss due to strike	20,000	0
Interest expense	<u>30,000</u>	<u>30,000</u>
Income before taxes	1,180,000	1,190,000
Income tax expense	<u>472,000</u>	<u>476,000</u>
Income from continuing operations	708,000	714,000
Discontinued operations, net	<u>72,000</u>	<u>0</u>
Net income	<u>\$ 780,000</u>	<u>\$ 714,000</u>
Earnings per share	\$2.50	\$2.30

**REQUIRED:**

1. Prepare common-size income statements (vertical analysis) for Bockman Industries for the two years presented.
2. Prepare a memo to the controller of Bockman identifying and describing a possible explanation for each of the following.
  - a. An increase in sales along with the change in the gross margin percentage.
  - b. An increase in sales along with the increase in selling expenses.
  - c. An increase in sales along with the increase in administrative expenses.
3. Assume that Bockman has no preferred stock outstanding and any change in the number of shares of common stock occurred at the beginning of Year 2. If the shareholders' equity at the end of Year 2 totaled \$7,363,200, calculate Bockman's book value per share.

**Question: 2.3 – Han Electronics Inc.**

Han Electronics Inc. is an electronics retailer with a fitness equipment retailer subsidiary. Han is a mature company with declining sales while the subsidiary is growing and profitable. The management of Han is considering several strategic options for the company as a whole. They considered purchasing additional companies to continue to diversify their product mix, or split out some or all of the subsidiary into a separate company so that each company could go in a different direction. Ultimately, the concern is that Han is failing. Management wants to maximize shareholder value, turn the company around, and continue as a going concern.

**REQUIRED:**

1.
  - a. Define mergers and acquisitions.
  - b. Does this scenario describe a merger or an acquisition?
  - c. Identify three possible synergies or benefits of mergers and acquisitions.
2.
  - a. Identify and describe the following two types of divestitures: spin-offs and equity carve-outs.
  - b. Identify whether either of these divestiture types is described in the scenario above.
3. Define bankruptcy and identify the different types of bankruptcy.

### **Question: 2.4 – OneCo, Inc.**

OneCo Inc. produces a single product. Cost per unit, based on the manufacture and sale of 10,000 units per month at full capacity, is shown below.

Direct materials	\$4.00
Direct labor	1.30
Variable overhead	2.50
Fixed overhead	3.40
Sales commission	<u>.90</u>
	<u>\$12.10</u>

The \$0.90 sales commission is paid for every unit sold through regular channels. Market demand is such that OneCo is operating at full capacity, and the firm has found it can sell all it can produce at the market price of \$16.50.

Currently, OneCo is considering two separate proposals:

- Gatsby, Inc. has offered to buy 1,000 units at \$14.35 each. Sales commission would be \$0.35 on this special order.
- Zelda Productions, Inc. has offered to produce 1,000 units at a delivered cost to OneCo of \$14.50 each.

### **REQUIRED:**

1. What would be the effect on OneCo's operating income of each of the following actions?
  - a. Acceptance of the proposal from Gatsby, but rejection of the proposal from Zelda.
  - b. Acceptance of the proposal from Zelda, but rejection of the proposal from Gatsby.
  - c. Acceptance of both proposals.
2. Assume Gatsby has offered a second proposal to purchase 2,000 units at the market price of \$16.50, but has requested product modifications that would increase direct materials cost by \$.30 per unit and increase direct labor and variable overhead by 15%. The sales commission would be \$.35 per unit.
  - a. Should OneCo accept this order? Explain your recommendation.
  - b. Would your recommendation be different if the company had excess capacity? Explain your answer.
3. Identify and describe at least two factors other than the effect on income that OneCo should consider before making a decision on the proposals.



### **Question: 2.5 - PARKCO**

Charlene Roberts is the controller for PARKCO, a company that owns and operates several parking garages in a large Midwestern American city. Recently, the management of PARKCO has been investigating the viability of building a parking garage in an area of the city that has experienced rapid growth. Some years ago, PARKCO acquired the necessary land at a cost of \$425,000, and had demolished worthless buildings on the land at a cost of \$72,000. Since then, the land has been rented by various construction companies as a temporary storage site for building materials while the construction companies completed projects in the area. PARKCO has averaged revenue of \$5,000 per year for this use of the property.

Roberts is currently assembling financial information relating to the proposed garage. In addition to the information already presented, she received from the CFO, John Demming, the following projections:

Number of parking spaces in the proposed garage	840
Number of parking spaces rented at the monthly rate	420
Average number of parkers paying the daily rate (for each of the 20 business days per month)	180
Fixed costs to operate the garage per month	\$30,000

Roberts estimates the monthly variable cost of servicing each monthly parker is \$12, and that the price of a monthly parking space would be \$75. The estimated cost per daily parker is \$2, and the daily parking rate is expected to be set at \$8. The parking garage would operate 20 business days per month.

Roberts believes, based on PARKCO's past experience with similar garages, that the projected number of monthly and daily parkers was too high. When she questioned Demming he replied, "This garage is going to be built no matter what your past experiences are. Just use the figures I gave you."

#### **REQUIRED:**

- Define sunk cost and opportunity cost.
  - How are these two types of cost recorded in the accounting records?
  - Identify the sunk costs and opportunity costs, if any, in the PARKCO scenario and show the amount of each.
- Using the data in the scenario, calculate pre-tax operating income. Show your calculations.

3. Roberts is uncomfortable with the implications of Demming's statement and has turned to IMA's Statement of Ethical Professional Practice for guidance. According to this guidance,
- identify the ethical principles that should guide the work of a management accountant.
  - identify the standards and describe how they would or would not apply in the circumstances described.
  - identify the steps Roberts should take to resolve this situation.

**Question: 2.6 – Bell Company**

Bell Company is a large diversified manufacturer organized into profit centers. Division managers are awarded a bonus each year if the division exceeds profit goals. While division managers are generally given control in operating their division, all capital expenditures over \$500,000 must be approved by the home office. Bob Charleson was recently appointed division manager of the Central Division.

Twelve months ago, Charleson's predecessor, who has been fired, was able to convince the home office to invest \$700,000 in modern manufacturing equipment with an expected life of 5 years. Included within the \$700,000 investment was a special packaging machine at a cost of \$200,000. This packaging machine has a 5-year useful life and a zero salvage value. Charleson has just learned of a new packaging process that would save the Central Division \$60,000 a year in packaging cost over the 5-year life of the equipment. As a result of the introduction of new technology the current packaging machine could be sold for \$75,000. Acquisition and installation of the new packaging process equipment would cost \$210,000. Central Division's cost of capital is 10% and it has an effective income tax rate of 40%. The new equipment has a zero salvage value and is depreciated over five years on a straight-line basis.

**REQUIRED:**

- Calculate the net present value of acquiring the new packaging process. Show your calculations.
- From a financial standpoint, should Bell Company invest in the new packaging technology? Explain your answer.
- Identify and explain three non-financial or behavioral factors that could cause Charleson to change the investment decision made in the previous question.

**Question: 2.7 – Grandeur Industries**

Grandeur Industries is currently in the process of reviewing capital budget submissions from its various divisions. Grandeur uses the Capital Asset Pricing Model (CAPM) for a variety of purposes, including the determination of benchmark investment returns. The company's overall cost of capital is 16% and its beta value is 1.2. The risk free rate is 4% and the expected return on the market is 14%. The following projects from different divisions are under consideration and there is no capital rationing in effect.

<u>Project</u>	<u>Internal Rate of Return</u>	<u>Project Beta</u>
A	16%	1.4
B	18%	1.6
C	12%	0.7
D	17%	1.1

**REQUIRED:**

- Calculate the required return for all four projects. Show your calculations.
  - Which of the four projects under consideration should Grandeur accept? Support your decision.
- Define and explain beta.
  - Describe four factors that would impact the beta value that is chosen for use in evaluating a project.
- Identify alternative approaches to dealing with risk in capital budgeting.

### **Question: 2.8 – Orion Corp.**

Orion Corp. is a logistics and transportation company. The finance director, John Kochar, is in the process of evaluating a number of proposed capital investment projects. The following information relates to the firm's finances.

- Some years ago the firm issued 10,000 bonds, each with a face value of \$1,000 and paying an annual coupon rate of 9.2%. These bonds are now trading at \$1,040 per bond. A coupon payment on these bonds was made yesterday and the bonds mature next year.
- The firm has no other debt or preferred stock outstanding.
- The firm has 2,000,000 shares of common stock outstanding. The stock is currently selling for \$14.80 per share and the firm is expected to pay a dividend of \$1.48 per share next year. The dividend is expected to grow at a constant rate of 4% per year in the foreseeable future.
- The firm's corporate tax rate is 30%.

Kochar is reviewing the capital investment projects shown below. All projects are in Orion's usual line of business and are being considered independently of each other. The following information is available. (Note that the net present values of the projects are estimated using the weighted average cost of capital.)

Project	Initial Outlay	IRR	NPV
A	\$450,000	17.0%	\$18,800
B	\$128,000	19.5%	\$2,300
C	\$262,000	16.2%	\$9,800
D	\$180,000	10.5%	-\$7,000
E	\$240,000	16.5%	\$22,500
F	\$160,000	11.1%	-\$900

The firm is also evaluating another proposed capital investment, project X, that is in a completely different line of business from Orion's usual operations. The project is expected to be financed from the existing capital structure and does not fall within any capital rationing restrictions. The following forecasted net after-tax cash flows relate to project X.

Year 0	Year 1	Year 2	Year 3	Year 4
-\$200,000	\$60,000	\$80,000	\$80,000	\$80,000

#### **REQUIRED:**

1. Based on the information provided, calculate Orion's weighted average cost of capital. Show your calculations.
2. Referring to projects A through F, identify which projects should be accepted by Orion. Provide a brief defense of the decision criteria that you have used in arriving at your recommendations.
3. Referring to project X, state whether the firm should use its weighted average cost of capital to evaluate this project. Explain your answer.

4. Based on an analysis of two firms with operations similar to project X, Kochar has determined that the project's beta is 1.5. The risk-free rate is 5% and the market risk premium is 10%. Calculate the net present value of project X and provide a recommendation on whether the project should be accepted. Show your calculations.
5. In the past the firm has typically used the payback period method for evaluating risky projects and accepted projects with a payback period less than 3 years.
  - a. Calculate the payback period for project X. Based on the firm's payback period threshold, what decision should the firm make regarding project X?
  - b. Provide one reason why using the payback period can result in the firm making a sub-optimal decision.

### **Question: 2.9 – Global Manufacturing**

Global Manufacturing is a Canadian company that processes a wide range of natural resources. Two years ago the company acquired Zeta Manufacturing, a raw material processing firm located in the United States. Over the last year, profits have fallen in the U.S.-based subsidiary. Laura Hammon, the Manager of Manufacturing Accounting for Zeta Manufacturing, has been asked to identify the problems that have impaired the firm's profits.

She has reviewed the monthly production cost reports and discovered that the per unit costs have been consistently increasing over the last year. Since the subsidiary used an actual cost system, Hammon convinced the president and the production manager that a thorough assessment of each product's cost and the implementation of a standard cost system would help to solve the problem.

Within six months, Hammon installed a fully operational standard cost system for the division. After several months of using the new cost system, Hammon is perplexed by unexplainable efficiency and yield variances, which result in material inventory write-downs at the end of each month. The work-in-process account is charged with the actual input costs of direct materials and direct labor, plus a predetermined rate for normal spoilage. At the end of the month, the work-in-process account is relieved by the standard cost per unit multiplied by the number of good units produced. This leaves a balance in the account which should be consistent with the uncompleted units still in process, but when compared to a physical inventory, there is a significant shortage of product in process, resulting in a write-down of inventory.

When Hammon explained her problems to the production manager, he scoffed and said, "It's your crazy standard cost system that is messed up." The production manager says that Hammon's cost system is poorly designed and does not track product costs accurately. Hammon is convinced there is nothing wrong with the design of the standard cost system. She knows that the inventory write-downs have no effect on the production manager's compensation; however, she has heard that his bonus is partially affected by the actual amount of spoilage. She decides to further examine the provision for normal spoilage, as well as the actual spoilage reported.

During the following month, she monitored the records of disposal truck traffic that left the plant at night. It would require only one truck nightly to dispose of the spoilage included in her standard cost. The records reflected an average of three disposal trucks leaving the plant each night. This unexplained traffic of disposal vehicles has caused her to be skeptical about the actual spoilage reported by the production manager.

**REQUIRED:**

1. Does Hammon have an ethical responsibility to determine what may explain the unusual inventory write-downs at Zeta Manufacturing? Support your answer by referring to the specific standards outlined in IMA's Statement of Ethical Professional Practice.
2. According to the IMA's Statement of Ethical Professional Practice, what are the steps that Hammon should take in order to resolve the situation?

**Question 2.10 – Cambridge Automotive**

Cambridge Automotive Products (CAP) Inc., a multinational corporation, is a major supplier of a broad range of components to the worldwide automobile and light truck market. CAP is in the process of developing a bid to supply an ignition system module to Korea Auto Corporation (KAC), a South Korean automobile manufacturer, for a new line of automobiles for the next four-year production cycle. The Request for Proposal issued by KAC specifies a quantity of 200,000 modules in the first year and 250,000 units in years 2 through 4 of the contract. CAP marketing specialists believe that, in order to be competitive, a bid of 100,000 South Korean Won (KRW) per unit is appropriate. Other relevant data are shown below.

- Manufacturing specialists estimate that a \$12 million (U.S. Dollars) investment in equipment (including installation) is required.
- The equipment is expected to last the 4-year life of the contract, at which time it would cost \$1.4 million to remove the equipment which would be sold for a scrap value of \$900,000.
- Direct labor and material expenses are estimated at \$40 per unit.
- The change in indirect cash expenses associated with this contract is expected to be \$3 million per year.
- The new product will require additional investment in inventory and accounts receivable balances at the outset, amounting to \$1.2 million during the four-year time period. This investment will be recovered at the end of the four-year contract.
- CAP is subject to U.S. income tax at an effective rate of 40%.
- For tax purposes, assume that the initial \$12 million cost of the equipment is depreciated evenly over the four-year period.
- The company economist estimates that the exchange rate will average 1,250 KRW per U.S. Dollar for the four-year time period.

**REQUIRED:**

1. Calculate the after-tax incremental cash flows in U.S. Dollars for the following periods:
  - a. Period 0.
  - b. Period 1.
  - c. Period 4 operating cash flow
  - d. Period 4 terminal cash flow.
2. The assumptions used to develop the cash flows are subject to various degrees of estimation error. For each of three different cash flow variables, identify and discuss one potential risk that could affect the estimates made by CAP.

### **Question 2.11 – City of Blakston**

The City of Blakston owns and operates a community swimming pool. The pool is open each year for 90 days during the summer months of June, July, and August. A daily admission is charged to patrons of the pool. By law, 10% of all recreational and sporting fees must be remitted to a state tourism promotion fund. The City Manager has set a goal that pool admission revenue, after subtracting the state fee and variable costs, must be sufficient to cover the fixed costs. Variable costs are assumed to be 15% of gross revenue. Fixed costs for the three-month period total \$33,000. The following budget for the pool has been prepared for the current year.

Adult admissions: 30 per day x 90 days x \$5.00	\$13,500
Student admissions: 120 per day x 90 days x \$2.50	<u>27,000</u>
Total revenue	40,500
State tourism fee	<u>4,050</u>
Net revenue	36,450
Variable costs	6,075
Fixed costs	<u>33,000</u>
Expected deficit	<u>\$ (2,625)</u>

The City Manager is trying to determine what admission mix is necessary to break even and what actions could be taken to eliminate the expected deficit.

#### **REQUIRED:**

1. Given the anticipated mix of adult and student admissions, how many total admissions must the pool have in order to break even for the season?
2. Regardless of the admissions mix, what is the highest number of admissions that would be necessary to break even for the season?
3. Regardless of the admissions mix, what is the lowest number of admissions that would be necessary to break even for the season?

### **Question 2.12 – Carroll Mining**

Alex Raminov is a management accountant at Carroll Mining and Manufacturing Company (CMMC), a large processor of ores and minerals. While working late one night to complete the footnotes for the financial statements, Raminov was looking for a file in his supervisor's office and noticed a report regarding procedures for disposing of plant wastes. According to handwritten notes on the face of the report, CMMC had been using a residential landfill in a nearby township to dump toxic coal cleaning fluid wastes over a considerable period of time. The report stated that locating a new dump site was urgent because the current one was nearing capacity.

Raminov realized that it was possible CMMC had been improperly disposing of highly toxic fluids in a landfill that was restricted to residential refuse. Besides the obvious hazards to residents of the area, there could be legal problems if and when the authorities were notified. The financial consequences of clean-up actions, as well as the loss of CMMC's generally good environmental reputation, could be catastrophic for the company.

Raminov asked his supervisor how this item was to be included in the footnotes and inquired whether an accrual for clean-up costs was anticipated. His supervisor told him to "forget about this matter" and that he had no intention of mentioning one word about waste disposal in this year's financial statements.

#### **REQUIRED:**

1. Using the categories outlined in IMA's Standards of Ethical Professional Practice, identify the standards that are specifically relevant to Alex Raminov's ethical conflict and explain why the standards are applicable to the situation.
2. According to the IMA's Standards of Ethical Professional Practice, what further steps, if any, should Raminov take in resolving his ethical dilemma?
3. If he continues to be rebuffed by his employer, should Raminov notify the appropriate authorities? Should he anonymously release the information to the local newspaper? Explain your answers.



### **Question 2.13 – Langley Industries**

Langley Industries plans to acquire new assets costing \$80 million during the coming year and is in the process of determining how to finance the acquisitions. The business plan for the coming year indicates that retained earnings of \$15 million will be available for new investments. As far as external financing is concerned, discussions with investment bankers indicate that market conditions for Langley securities should be as follows.

- Bonds with a coupon rate of 10% can be sold at par.
- Preferred stock with an annual dividend of 12% can be sold at par.
- Common stock can be sold to yield Langley \$58 per share.

The company's current capital structure, which is considered optimal, is as follows.

Long-term debt	\$175 million
Preferred stock	50 million
Common equity	275 million

Financial studies performed for Langley indicate that the cost of common equity is 16%. The company has a 40% marginal tax rate. (Ignore floatation costs for all calculations.)

#### **REQUIRED:**

1. Determine how Langley should finance its \$80 million capital expenditure program, considering all sources of funds. Be sure to identify how many new shares of common stock will have to be sold. Show your calculations.
2. Calculate Langley's weighted average cost of capital that it could use to assess the viability of investment options.
3. Identify how each of the following events, considered individually, would affect Langley's cost of capital (increase, decrease, no change). No calculations are required.
  - a. The corporate tax rate is increased.
  - b. Banks indicate that lending rates will be increasing.
  - c. Langley's Beta value is reduced due to investor perception of risk.
  - d. The firm decides to significantly increase the percent of debt in its capital structure since debt is the lowest cost source of funds.

### **Question 2.14 – Sentech Scientific**

Sentech Scientific Inc., a manufacturer of test instruments, is in contract negotiations with the labor union that represents its hourly manufacturing employees. Negotiations have reached an impasse, and it appears that a strike is imminent. The controller has called the general accounting manager into his office to discuss liquidity issues if and when a strike does occur.

The controller asks the accounting manager to recommend measures to assess liquidity if a strike were to occur. Although some of the nonunion employees could probably produce test instruments during a strike, the controller would rather be conservative and assume no shipments during this time frame. Since the customers may go to other sources to obtain the products they need during a strike, cash receipts for current outstanding amounts owed by customers may not be paid on a timely basis.

#### **REQUIRED:**

1. Define liquidity and explain its importance to Sentech.
2. Identify three measures that could be used to assess liquidity and explain how to calculate these measures.
3. Determine which liquidity measure identified above would best fit the controller's requirements, and explain why. Include in your discussion the reasons why the other measures would not be as appropriate.

### **Question 2.15 – Ultra Comp**

Ultra Comp is a large information technology firm with several facilities. The firm's Audit Committee has determined that management must implement more effective security measures at its facilities. A Security Improvement Team has been formed to formulate a solution. Janet Lynch is the financial analyst assigned to the team. She has determined that a six-year time horizon is appropriate for the analysis and that a 14% cost of capital is applicable. The team is investigating the following three vendors.

- Vendor A is a new entrant to the security industry and is in the process of introducing its security system which utilizes new technology. The system would require an initial investment of \$4 million and have a life of six years. A net cash outflow of \$500,000 per year for salaries, operation, maintenance, and all costs related to the system would also be required.
- Vendor B is an established firm in the security industry and has a security system that has been on the market for several years. The system requires an initial investment of \$1 million and will have a useful life of three years. At the end of the three-year period, Ultra Comp would have to replace the hardware at an estimated cost of \$1,250,000, based on current technology. A net cash outflow of \$750,000 per year for salaries, operation, maintenance, and all other related costs would also be required.
- Vendor C is a nationally recognized firm in the security industry and has proposed to Ultra Comp that it provide a total security solution. Vendor C would provide all hardware and personnel to operate and maintain a security system as called for by the specifications of Ultra Comp for all its locations. Ultra Comp would be required to sign a six-year contract at a cost of \$1,400,000 per year.

#### **REQUIRED:**

1. Ultra Comp utilizes the Net Present Value (NPV) method to quantify the financial aspects of corporate decisions. Calculate the NPV of each of the three alternatives.
2. Based on financial considerations, which of the three alternatives should the team recommend? Explain why.
3. Define sensitivity analysis and discuss how Ultra Comp could use this technique in analyzing the three vendor alternatives.
4. Identify and briefly discuss three non-financial considerations that the Ultra Comp team should consider prior to making a recommendation to senior management.

### **Question 2.16 – Right-Way**

Right-Way Stores is a chain of home improvement stores with 150 locations. Right-Way has identified an attractive site for a new store and Jim Smith, Director of Financial Planning, has been asked to prepare an analysis and make a recommendation for or against opening this proposed new store.

In preparing his analysis, Smith has determined that the land at the proposed site will cost \$500,000 and the new store will cost \$3.5 million to build. The building contractor requires full payment at the start of construction, and it will take one year to build the store. Right-Way will finance the purchase of the land and construction of the new building with a 40-year mortgage. The mortgage payment will be \$118,000 payable annually at year end. Fixtures for the store are estimated to cost \$100,000 and will be expensed. Inventory to stock the store is estimated to cost \$100,000. Concerned about the possibility of rising prices, the company expects to purchase the fixtures and inventory at the start of construction. Advertising for the grand opening will be \$50,000, paid to the advertising agency on retainer at the start of construction. The new store will begin operations one year after the start of construction.

Right-Way will depreciate the building over 20 years on a straight-line basis, and is subject to a 35% tax rate. Right-Way uses a 12% hurdle rate to evaluate projects. The company expects to earn after-tax operating income from the new store of \$1,200,000 per year.

#### **REQUIRED:**

1. What is Right-Way's total initial cash outflow? Show your calculations.
2. Calculate the annual expected cash flow from the proposed new store. Show your calculations.
3. Right-Way management evaluates new stores over a five-year horizon as management believes there is too much uncertainty after 5 years of operation. Calculate the Net Present Value (NPV) for the store for the first 5 years of operation. Show your calculations.
4. Based solely on your answer to C, would you recommend that Right-Way build this store? Explain your answer.
5. How would you use sensitivity analysis to test your confidence in the recommendation? No calculations are required.

### **Question 2.17 – Hi-Quality Productions**

Amy Kimbell was recently hired as an accounting manager for Hi-Quality Productions Inc., a publicly-held company producing components for the automotive industry. One division, Alpha, uses a highly automated process that had been outsourced for a number of years because the capital investment required was high and the technology was constantly changing. Two years ago, the company decided to make the necessary capital investment and bring the operation in house. Since all major capital investments must be approved by the Board of Directors, the budget committee for the Alpha Division recommended the \$4 million investment to the Board, projecting a significant cost savings.

In her new job as accounting manager, Kimbell is on the budget committee for the Alpha Division. The Board has requested from the committee a post-audit review of the actual cost savings. While working on the review, Kimball noted that several of the projections in the original proposal were very aggressive, including an unusually high salvage value and an excessively long useful life. If more realistic projections had been used, Kimbell doubts that the Board would have approved the investment.

When Kimbell expressed her concerns at the next meeting of Alpha's budget committee, she was told that it had been the unanimous decision of the committee to recommend the investment because it was thought to be in the best long-term interest of the company. According to the committee members, the post-audit report would not discuss these issues; the committee members believe that certain adjustments to the review are justified to ensure the success of the Alpha division and the company as a whole.

#### **REQUIRED:**

1. Using the categories outlined in IMA's Statement of Ethical Professional Practice, identify the standards that are specifically relevant to Kimbell's ethical conflict and explain why the identified standards are applicable to the situation.
2. According to IMA's Statement of Ethical Professional Practice, what specific actions should Kimbell take to resolve her ethical conflict?

### **Question 2.18 – Madison**

David Burns is the Manager of the Electrical Division of Madison Inc. The budget for the upcoming year has just been finalized and is summarized below.

<b><u>Budget Component</u></b>	<b><u>Amount</u></b>
Revenue	\$17,050,000
Direct labor (300,000 hours @ \$20/hr)	6,000,000
Employee benefits	2,400,000
Tools and equipment	1,800,000
Materials	2,000,000
Material procurement and handling	200,000
Overhead	<u>3,100,000</u>
Pretax profit	<u>\$1,550,000</u>

The budget meets the firm's general guideline of a pretax profit equal to 10% of cost. Various components of the budget can be described as follows:

- Direct labor represents the wage costs of employees (craft personnel, job site supervisors, engineers, etc.) who work on specific projects and are directly billable to customer projects. Madison charges this to customers based on the number of hours employees work on the project times the average wage per hour.
- Employee benefits include the cost to Madison of paid time off (vacations, holidays, and sickness), pensions, health and life insurance, and payroll taxes. This is charged to customers as a percent of direct labor.
- Tools and equipment includes the cost of small tools, larger equipment such as cranes, backhoes and generators, and the cost of vehicles including maintenance, fuel, insurance, etc. This is charged to customers as a percent of direct labor charged to the job.
- Materials include materials acquired by Madison for use on customer projects, the cost of which is passed directly on to the specific customers.
- Material procurement and handling represents the cost incurred by Madison to purchase, warehouse, and deliver materials (referenced in the above bullet point) to job sites. This is charged to customers as a percent of the material cost.
- Overhead includes the salary and benefit costs of employees not directly chargeable to projects (administrative and corporate staff as well as senior management) and other corporate expenses for facilities and supplies, most of which are relatively fixed. This is charged to customers as a percent of all other costs incurred on the project.

### **REQUIRED:**

1. David Burns received a call from Colby Architects asking for a price quote for a component of electrical work to be done on an office building project. Based on the detailed specifications, Burns estimated that the job would require 10,000 direct labor hours and materials costing \$200,000. He decided to develop a cost proposal for other cost elements based on the percentages inherent in the budget, including a pretax profit equal to 10% of cost. Determine the amount of the quote. Show your calculations.

2. Madison measures the performance of its managers, including Burns, based on their ability to achieve budget targets, focusing on pretax profit as a percent of billable cost for each project completed. Identify three advantages and three disadvantages of a performance measurement and incentive compensation system linked to the budget for a firm such as Madison.
3. Two weeks after submitting his bid, Burns received a call from Colby stating that if Madison could meet the lowest fixed cost bid of \$695,000, then it would be awarded the contract. Identify the factors that Burns should consider in deciding whether to accept the fixed price of \$695,000.
4. If Burns decides to accept the contract for the fixed price of \$695,000, identify two reasons that Burns can use to justify his decision. Explain your answer.

### **Question 2.19 – GRQ Company**

GRQ Company is a privately-held entity that refines a variety of natural raw materials used as primary inputs for the steel industry. The firm has done well over the last several years and most members of senior management have received bonuses well in excess of 60% of their base salaries. Also, both the CFO and the CEO have earned bonuses in excess of 100% of their base salaries. GRQ has projected this trend of successful earnings and bonuses to continue.

All-American Steel Company (AAS) has tendered a very generous offer to acquire GRQ. At the same time, several top GRQ executives who own over 40% of GRQ's stock, have learned that the primary supplier of their major raw material will not renew their contract at the end of the current fiscal year. GRQ has no other vendors available within the United States to competitively provide this raw material in the magnitude needed to support their continued record of profitable operations.

As part of the due diligence process, an analyst with AAS has asked John Spencer, controller of GRQ, if he knows of any material event that would impact earnings over the next several years. Spencer, who also participates in the bonus program, is aware that GRQ's primary supplier will no longer provide raw materials to the firm beyond the end of the current fiscal year. He spoke with Bob Green, the CFO of GRQ, telling him that while the profit projections for the remainder of the current year will match the earnings of prior years, it is obvious that projected earnings for the next year will be greatly reduced. Green informed Spencer that the executive committee had met and decided that only members of top management were to be made aware of the situation with their key supplier. Accordingly, Spencer should not inform AAS of the situation with the supplier.

### **REQUIRED:**

1. Referring to the specific standards outlined in IMA's Statement of Ethical Professional Practice, identify and discuss Spencer's ethical obligations.
2. According to IMA's Statement of Ethical Professional Practice, identify the steps that Spencer should take to resolve the dilemma.

## **Question 2.20 – CenturySound**

CenturySound, Inc. produces cutting edge high-end audio systems that are sold primarily through major retailers. Any production overruns are sold to discount retailers, under CenturySound's private label SoundDynamX. The discount retail segment appears very profitable because the basic operating budget assigns all fixed expenses to production for the major retailers, the only predictable market.

Several years ago, CenturySound implemented a 100% testing program. On average approximately 3% of production is found to be substandard and unacceptable. Of this 3% approximately 2/3 are reworked and the remaining 1/3 are scrapped. However, in a recent analysis of customer complaints, George Wilson, the Cost Accountant and Barry Ross, the Quality Control Engineer, have ascertained that normal rework does not bring the audio systems up to standard. Sampling shows that about 25% of the reworked audio systems will fail after extended operation within one year. Unfortunately, there is no way to determine which reworked audio systems will fail because testing will not detect this problem. CenturySound's marketing analyst has indicated that this problem will have a significant impact on the company's reputation and customer satisfaction if the problem is not corrected. Consequently, the Board of Directors would interpret this problem as having serious negative implications on the company's profitability. Wilson has included the audio system failure and rework problem in his written report that has been prepared for the upcoming quarterly meeting of the Board of Directors. Due to the potential adverse economic impact, Wilson has followed a long standing practice of highlighting this information. After reviewing the reports to be presented, the Plant Manager was upset and said to the Controller, "We can't trouble the Board with this kind of material. Tell Wilson to tone that down. People cannot expect their systems to last forever." The Controller called Wilson into his office and said, "George, you'll have to bury this one. The probable failure of reworks can be referred to briefly in the oral presentation, but it should not be mentioned or highlighted in the advance material mailed to the Board." Wilson feels strongly that the Board will be misinformed on a potentially serious loss of income if he follows the Controller's orders. Wilson discussed the problem with Ross, the Quality Control Engineer, who simply remarked, "That's your problem, George."

### **REQUIRED:**

1. Identify and discuss the ethical considerations that George Wilson should recognize in deciding how to proceed in this matter. Support your answer by referring to the specific standards outlined in the IMA's Statement of Ethical Professional Practice.
2. According to the IMA's Statement of Ethical Professional Practice, what are the steps Wilson should take in order to resolve the situation?



### **Question 2.21 – Romco**

Alex Conrad, financial analyst for RomCo, is presenting two mutually exclusive capital budgeting project proposals to the management team. The preliminary results for the net present value (NPV) and internal rate of return (IRR) analyses of the two projects being discussed are as follows.

	<u>Initial Investment</u>	<u>NPV</u>	<u>IRR</u>
Project 1	\$822,800	\$0	12.00%
Project 2	\$300,000	\$49,469	17.65%

Project 1 is expected to have a positive after-tax cash flow of \$200,000 per year for six years after the initial investment, and Project 2 is expected to have a positive after-tax cash flow of \$85,000 for six years after the initial investment. During the meeting, Conrad was asked to explain several issues related to his analysis of the projects.

#### **REQUIRED:**

1. Because of volatility in the financial markets, the company's cost of equity may be higher than assumed in this analysis. This is important as RomCo is entirely equity financed.
  - a. What cost of equity was used in this analysis? Explain your answer.
  - b. Would an increase in the cost of equity affect the NPV and IRR of the projects, and thus the desirability of undertaking the projects? Explain your answer.
2. There is a possibility that the corporate income tax rate may be lowered in the near future. If this were to occur, how would this affect the NPV and IRR of the projects, and the desirability of investing in the projects?
3.
  - a. What is the payback period for each project? Show your calculations.
  - b. Identify and explain three weaknesses of using the payback period to decide on doing these projects.

### **Question 2.22 – Kolobok**

Kolobok, Inc. produces premium ice cream in a variety of flavors. Over the past several years, the company has experienced rapid and continuous growth and is planning to increase manufacturing capacity by opening production facilities in new geographic areas. These initiatives have put pressure on management to better understand both their potential markets and associated costs. Kolobok's management identified three aspects of their current operation that could affect the new market expansion decision: (1) a highly competitive ice cream market, (2) the company's current marketing strategy, and (3) the company's current cost structure.

Since the company began operations in 1990, Kolobok has used the mark-up approach for establishing prices for six-gallon containers of ice cream. The product prices include the cost of materials and labor, a markup for profit and overhead cost (a standard \$20), and a market adjustment. The market adjustment is used to appropriately position a variety of products in the market. The goal is to price the products in the middle of comparable ice creams offered by competitors while maintaining high quality and high differentiation. Sales for 2007 based on Kolobok's mark-up pricing are presented below by product.

Product	Material & Labor	Markup	Market adjustment	Unit Price	Boxes sold	Total Materials & Labor	Total Sales
Vanilla	\$29.00	\$20.00	\$1.00	\$50.00	10,200	\$295,800	\$510,000
Chocolate	28.00	20.00	7.00	55.00	12,500	350,000	687,500
Caramel	26.00	20.00	2.00	48.00	12,900	335,400	619,200
Raspberry	27.00	20.00	2.00	49.00	13,600	367,200	666,400
Total					49,200	\$1,348,400	\$2,483,100

For the year 2007, Kolobok's before-tax return on sales was 7%. The company's overhead expenses were \$500,000, selling expenses \$250,000, administrative expenses \$180,000, and interest expenses were \$30,000. Kolobok's marginal tax rate is 30%.

Kolobok is considering replacing mark-up pricing with target costing and has prepared the table below to better compare the methods. Kolobok tries to appeal to the top 30% of the retail sales customers, including restaurants and cafes. In positioning Kolobok's products, three dimensions are considered: price, quality, and product differentiation. Accordingly, there are three main competitors in the market as follows.

Competitor A – Low cost, low quality, high standardization

Competitor B – Average cost, moderate quality, average differentiation

Competitor C – High cost, high quality, high differentiation

<i>Product</i>	<i>Competitor A Pricing</i>	<i>Competitor B Pricing</i>	<i>Competitor C Pricing</i>	<i>Kolobok Target Prices</i>
Vanilla	\$49	\$55	\$55	\$53
Chocolate	50	53	56	53
Caramel			51	50
Raspberry		51	52	50

Kolobok has also been reviewing its purchasing, manufacturing, and distribution processes. Assuming that sales volumes will not be affected by the new target prices, the company believes that improvements will yield a \$125,000 decrease in labor expense and a 25% reduction in overhead expense.

**REQUIRED:**

1. Describe target costing.
2. Analyze and compare the two alternative pricing methods: mark-up pricing and target costing.
3. Assuming that the sales volumes will not be affected by the new product pricing based on target costing and that the process improvements will be implemented, calculate Kolobok's before-tax return on sales using the proposed target prices.
4. Recommend which pricing method (mark-up or target) Kolobok should use in the future and explain why.

**Question 2.23 - Pursuit of Profit**

Firms employ different strategies in the pursuit of profit, with successful strategies often dictated by the type of industries and markets in which the firms operate. Listed below are selected entries from the financial reports of two firms (labeled "A" and "B").

<u>Firm A (in €millions)</u>			
<u>Income Statement Items</u>		<u>Balance Sheet Items</u>	
Net sales	120	Assets	273
Cost of goods sold	48	Liabilities	200
Selling, general and administrative expenses	18	Shareholders' equity	73
Depreciation	6		
Interest expense	23		
Taxes	8		

<u>Firm B (in €millions)</u>			
<u>Income Statement Items</u>		<u>Balance Sheet Items</u>	
Net sales	74	Assets	168
Cost of goods sold	25	Liabilities	84
Selling, general and administrative expenses	11	Shareholders' equity	84
Depreciation	2		
Interest Expense	10		
Taxes	7		

The DuPont approach provides a useful way to compare the financial performance of firms.

**REQUIRED:**

1. What are two advantages of using the DuPont approach?
2. Calculate return on equity for both firms using the DuPont formula.
3.
  - a. Calculate each firm's debt to equity ratio.
  - b. Discuss how the use of leverage affects the financial risk of the firms.
4. Discuss why the use of higher levels of financial leverage may be appropriate for some firms, but too risky for others.
5. One firm uses a higher degree of financial leverage, and yet their return on equity is similar to that of the other firm. Discuss the other factors that impact return on equity with respect to Firms A and B.
6. Identify two limitations of financial ratio analysis.

**Question 2.24 - Edmonds**

Edmonds Manufacturing is located in the northwest region of the U.S. The company is experiencing tremendous growth in demand for its products. Management has discussed the distribution channel as an impediment to the company's ability to keep up with growing demand. Manufacturing facilities have excess capacity to meet increasing orders, but the company will have difficulty getting the products to the customers. The supply chain distribution manager has suggested the company purchase a new building to expand the storage area near the distribution center. After some collaborative research by the accounting and finance departments, the company found that a new building will cost \$25,000,000. The new building will have an estimated useful life of ten years with no salvage value. Operating the new building will cost approximately \$1,000,000 per year but the new building will allow the company to increase sales significantly. Distribution managers believe the new building will increase productivity to allow for additional sales of 500,000 units each year. Marketing managers estimate the demand for the company's product will increase 750,000 units each year. The average contribution margin for the company's products is \$55. The company's effective income tax rate is 40%.

**REQUIRED:**

1.
  - a. Define capital budgeting.
  - b. What two steps should Edmonds take in evaluating and implementing this project?
2. What are two qualitative factors Edmonds should consider before implementing this project?
3. Identify the relevant cash flows for the project on both a pretax and an after-tax basis. Show your calculations.

4. a. Define Net Present Value (NPV).  
b. Define Internal Rate of Return (IRR).  
c. Identify one assumption of NPV and one assumption of IRR.  
d. Discuss the decision criteria used in NPV and IRR to determine acceptable projects.
5. Explain one advantage and one disadvantage of IRR.
6. a. Define the payback method  
b. Identify and explain two disadvantages of the payback method.

### **Question 2.25 - Vista**

Vista Ltd., a closely-held firm, is trying to determine a benchmark for its cost of equity. Comparable firms in the industry have a price/earnings ratio of 11, an average beta value of 1.05, a dividend payout ratio of 40% of earnings, and a projected growth rate of 10%. For the fiscal year just ended, Vista had earnings per share of \$3.00 and is expected to achieve the industry average growth rate in the coming year. Economic indicators show the risk-free rate is 5% and the return on the market is 15%.

#### **REQUIRED:**

1. Calculate Vista's cost of equity using the dividend growth model. Show your calculations.
2. Calculate Vista's cost of equity using the Capital Asset Pricing Model. Show your calculations.
3. Compare the dividend growth model to the Capital Asset Pricing Model, by identifying at least three characteristics of each.
4. Identify and discuss three factors that impact a firm's cost of equity.

### **Question 2.26 – Atlas Express**

Atlas Express, established thirty years ago, provides mailing and shipping services worldwide. The company has 50 office locations in the U.S. A recent economic recession and its lingering effects, accompanied by the acceptance and growth of major new technological platforms, has had a significant negative impact on the company's revenue as mail and shipping volume has fallen precipitously. Atlas anticipates that volume will decrease for the foreseeable future. During the past year, the company purchased new equipment worth \$41,800. Proceeds from sales of the old equipment were \$11,500 with a net gain of \$1,700. Below are the balance sheets as of December 31, 20X2 and as of December 31, 20X1, and the income statement for the year ended December 31, 20X2.

#### Balance Sheets

	<u>December 31, 20X2</u>	<u>December 31, 20X1</u>
Cash and cash equivalents	\$ 81,800	\$ 148,800
Receivables, net	87,900	104,100
Advances and prepayments	<u>15,400</u>	<u>12,000</u>
Total current assets	<u>185,100</u>	<u>264,900</u>

Buildings, equipment and land, net	<u>2,001,400</u>	<u>2,076,400</u>
Total assets	<u>\$ 2,186,500</u>	<u>\$ 2,341,300</u>
Compensation and benefits	915,300	360,000
Trade payables and accrued expenses	420,100	438,800
Deferred revenue-prepaid postage	386,800	349,700
Short-term portion of debt	<u>744,600</u>	<u>750,000</u>
Total current liabilities	<u>2,466,800</u>	<u>1,898,500</u>
Long-term debt	<u>2,260,100</u>	<u>2,336,800</u>
Total equity	<u>(2,540,400)</u>	<u>(1,894,000)</u>
Total liabilities and equity	<u>\$ 2,186,500</u>	<u>\$ 2,341,300</u>

#### Income Statement

	<u>Year ended December 31, 20X2</u>
Operating revenue	\$ 3,390,400
Compensation and benefits	3,234,500
Transportation	502,500
Depreciation and amortization	107,000
Other	184,700
Total operating expenses	<u>4,028,700</u>
Loss from operations	<u>(638,300)</u>
Interest expense	<u>(8,100)</u>
Net loss	<u>\$ (646,400)</u>

#### REQUIRED:

1. Use two financial ratios to analyze the liquidity of the company. Show your calculations and explain your analysis.
2. Recommend two ways to improve liquidity.
3.
  - a. Define bankruptcy.
  - b. Identify one advantage and one disadvantage of declaring bankruptcy.
  - c. Do you recommend bankruptcy for Atlas? Explain your answer.

### **Question 2.27 – Leather Manufacturer**

A company manufactures leather purses using a labor force for the process of hand cutting and sewing the leather. The company is considering changing the current manufacturing process by using a new machine capable of cutting the leather. Workers would then assemble the precut pieces into the finished product. The company anticipates selling 31,250 units at a selling price of \$80 each. The machine is available to lease at a cost of \$550,000 per year with a ten-year lease commitment. The lease is an operating lease. If the machine is not leased, the company will continue to utilize its current hand cutting process. The projected income statements for next year are shown below.

	<u>Lease Equipment</u>	<u>Continue Current Process</u>
Sales	\$2,500,000	\$2,500,000
Variable costs of goods sold	<u>950,000</u>	<u>1,500,000</u>
Contribution margin	1,550,000	1,000,000
Fixed costs	<u>1,200,000</u>	<u>650,000</u>
Operating income	<u>\$ 350,000</u>	<u>\$ 350,000</u>

With identical operating incomes for next year, the company is not sure if it should lease the equipment or continue with the current hand cutting process.

#### **REQUIRED:**

- Explain two ways the concept of operating leverage influences this decision.
  - Calculate the degree of operating leverage for each option.
- Calculate the expected increase in operating income for next year under each option assuming sales increase by 5% in each option.
  - If the company expects sales to increase 5% each year for the next ten years, which option should the company choose? Explain your answers.
- Assume the company had the option to purchase the new equipment instead of lease. The purchase would be financed with debt. What differences would the financial statements show between purchasing the equipment and leasing the equipment?
- Purchasing the equipment for \$6,000,000 would lead to an annual cash savings of approximately \$500,000.
  - Calculate the payback period.
  - Describe two disadvantages of using the payback period.

## Answer to Part 1 Practice Questions

### Answer: Question 1.1 – Coe Company

<u>1. Cumulative Number of Units</u>	<u>Cumulative Average Time/Unit</u>	<u>Cumulative Total Time</u>
1	500	500
2	$500 \times .9 = 450$	$450 \times 2 = 900$
4	$450 \times .9 = 405$	$405 \times 4 = 1620$

2.  $\$25 \times 500 \text{ hours} \times 4 \text{ units} = \$50,000$  with no learning curve  
 $\$25 \times 405 \times 4 \text{ units} = \$40,500$  with 90% learning curve  
 $\$50,000 - \$40,500 = \$9,500$  savings
3. a. Budgetary slack is the practice of underestimating budgeted revenues, or overestimating budgeted costs, to make budgeted targets more easily achievable.  
b. Budgetary slack misleads top management about the true profit potential of the company, which leads to inefficient resource planning and allocation as well as poor coordination of activities across different parts of the company.
4. a. 1.  $1,740 \times (25.00 - [44,805/1,740]) = 1,305\text{U}$   
2.  $25.00 \times (1,740 - [4 \times 500]) = 6,500\text{F}$   
b. Direct labor rate variance remains the same, but direct labor efficiency variance will become \$3000 negative, because actual hours 1740 is more than expected from 90% learning curve 1620.
5. A factor that could cause an unfavorable price variance and a favorable efficiency variance is using a higher-skilled labor force that would be paid more per hour but would work more quickly.
6. Direct labor efficiency variance would be even more unfavorable if an 80% learning curve was used. The lower number implies more benefit from learning.
7. For a new product, the company may have no way of forecasting the amount of improvement (if any) from savings. The company may set up a production method that is more efficient than prototype, but will not gain further efficiencies.



### **Answer 1.2 – Law Services Inc.**

1. A flexible budget allows the attorneys to tell how much of their unfavorable variance is due to lower than planned billing hours and how much is due to performance issues such as the negotiated billed amount or variable expenses. A master budget is static and any variance must be analyzed further to determine its cause.
2. The flexible budget revenues are calculated by multiplying the actual billed hours by the budgeted amount per billed hour. Then the budgeted variable expense per billed hour is multiplied by the actual billed hours. The flexible budget variable expense is subtracted from the flexible budget revenue. The results are compared to the actual results from last year.
3.  $6,000 * 325 = 1,950,000$  static budget revenue  
 $5,700 * 275 = 1,567,500$  actual revenue  
 $1,950,000 - 1,567,500 = \$382,500$  unfavorable static budget revenue variance  
 $5,700 * 325 = 1,852,500$  flexible budget revenue  
 $1,852,500 - 1,567,500 = \$285,000$  flexible budget variance  
 $6,000 - 5,700 = 300$  hours unfavorable sales volume  
 $300 * 325 = \$97,500$  unfavorable sales volume variance
4.  $6,000 * 50 = 300,000$  static budget variable expense  
 $300,000 - 285,000 = \$15,000$  favorable variable expense variance  
 $5,700 * 50 = 285,000$  flexible budget variable expense  
 $285,000 - 285,000 = \$0$ , so the variance is a sales volume variance

### **Answer: Question 1.3 – Inman Inc.**

1. a. 

Materials	\$400,000	
Direct labor	100,000	
Variable manufacturing overhead	20,000	
Fixed manufacturing overhead	<u>200,000</u>	
	$\$720,000/100,000 = \$7.20$	
- b.  $10,000$  beginning inventory +  $100,000$  manufactured –  $106,000$  sold =  $4,000$  units in ending inventory;  $4,000 \times \$7.20 = \$28,800$ .
- c. 

Sales ( $106,000 \times \$12$ )		\$1,272,000	
Cost of Goods Sold:			
Beginning inventory	\$ 72,000		
Cost of goods manufactured ( $100,000 \times \$7.20$ )	720,000		
- Ending inventory	<u>(28,800)</u>	<u>763,200</u>	
Gross profit			508,800
Less selling & administrative			
Variable costs	80,000		
Fixed costs	<u>300,000</u>	<u>380,000</u>	
Income			\$ 128,800

- |       |                                  |                            |                |
|-------|----------------------------------|----------------------------|----------------|
| 2. a. | Materials                        | \$400,000                  |                |
|       | Direct labor                     | 100,000                    |                |
|       | Variable manufacturing overhead  | <u>20,000</u>              |                |
|       |                                  | \$520,000/100,000 = \$5.20 |                |
| b.    | 4,000 units x \$5.20 = \$20,800  |                            |                |
| c.    | Sales                            |                            | \$1,272,000    |
|       | Less variable costs:             |                            |                |
|       | Manufacturing = \$5.20 x 106,000 | \$551,200                  |                |
|       | Selling and administrative       | <u>80,000</u>              | <u>631,200</u> |
|       | Contribution margin              |                            | 640,800        |
|       | Less fixed costs:                |                            |                |
|       | Manufacturing                    | 200,000                    |                |
|       | Selling and administrative       | <u>300,000</u>             | <u>500,000</u> |
|       | Income                           |                            | \$ 140,800     |
3. The difference in incomes is caused by the treatment of fixed manufacturing overhead. Absorption costing treats this cost as a product cost that is held in inventory until the goods are sold; variable costing treats fixed manufacturing overhead as a period cost, showing it as an expense immediately. Because inventory decreased, absorption costing would expense all of the current month's fixed manufacturing overhead as well as some of the costs that were previously deferred in the prior period's inventory; variable costing would only expense the current month's amount, resulting in a higher income.
4. a. The advantages of using absorption costing are:  
It is required for external reporting.  
It matches all manufacturing costs with revenues.
- b. The advantages of using variable costing are:  
Data required for cost-volume-profit analysis can be taken directly from the statement.  
The profit for a period is not affected by changes in inventories.  
Unit product costs do not contain fixed costs that are often unitized, a practice that could result in poor decision-making.  
The impact of fixed costs on profits is emphasized.  
It is easier to estimate a product's profitability.  
It ties in with cost control measures such as flexible budgets.
5. a. Top-down advantage: speed, control top-down disadvantage: little buy-in, top has less info  
Bottom-up advantage: more likely to commit, disadvantage: may set easier targets
- b. Best: top-down, cost of products most important, want to focus on control
- c. Benchmark with outside examples, mutual learning about problems, balance scorecard methods of evaluation.

### Answer: Question 1.4 – Smart Electronics

1. Model M-11:

Overhead cost allocated (per unit): [ $\text{€}80,000 / (650 + 150)$ ]  $\times 650 = \text{€}5,000$   $65000/1300=50$

Gross margin per unit:  $\text{€}90 - \text{€}10 - \text{€}50 = \text{€}30$

Model R-24:

Overhead cost allocated (per unit): [ $\text{€}80,000 / (650 + 150)$ ]  $\times 150 = \text{€}15,000$

$15,000/1500=10$

Gross margin per unit:  $\text{€}60 - \text{€}30 - \text{€}10 = \text{€}20$

2. Setups:  $\text{€}20,000 / (3 + 7) = \text{€}2,000$

Components:  $\text{€}50,000 / (17 + 33) = \text{€}1,000$

Material Movements:  $\text{€}10,000 / (15 + 35) = \text{€}200$

Model M-11:

$(\text{€}2,000 \times 3) + (\text{€}1,000 \times 170) + (\text{€}200 \times 15) = \text{€}26,000$

Overhead cost allocated by ABC (per unit):  $\text{€}26,600 / 1300 = \text{€}20.00$

Gross margin per unit:  $\text{€}90 - \text{€}10 - \text{€}20.00 = \text{€}60.00$

Model R-24:

$(\text{€}2,000 \times 7) + (\text{€}1,000 \times 33) + (\text{€}200 \times 35) = \text{€}54,000$

Overhead cost allocated by ABC (per unit):  $\text{€}54,000 / 1,500 = \text{€}36.00$

Gross margin per unit:  $\text{€}60 - \text{€}30 - \text{€}36 = -\text{€}6.00$

3. Because the products do not all require the same proportionate shares of the overhead resources of setup hours and components, the ABC system provides different results than the traditional system. The traditional method use volume base allocation base which allocates overhead costs on the basis of direct labor hours. The ABC system considers important differences in overhead resource requirements by using multiple cost drivers and thus provides a better picture of the costs of each product model, provided that the activity measures are fairly estimated.

In the case of Smart Electronics, model R-24 uses more setups, components and material movements which might not be reflected in the labor hours. The following table shows the overhead allocated per unit and profit margin per unit under the current conventional costing system and ABC. As indicated, model R-24 was previously under-costed and model M-11 was over-costed.

Overhead Allocated per unit under the current costing system and ABC:

	Current costing system	ABC
Model M-11	$\text{€}50$	$\text{€}20.00$
Model R-24	$\text{€}10$	$\text{€}36.00$

#### Gross Margin per unit under the current costing system and ABC

	Current costing system	ABC
Model M-11	€30	€60.00
Model R-24	€20	-€6.00

Smart Electronics' management can use the information from the ABC system to make better pricing decisions. After allocating overhead by ABC, it gives a clear cost picture that model R-24 costs more to manufacture because it uses more setups, components and material movements. The current price of \$60 is inadequate in covering the total cost and results in negative gross margin. Therefore, the company might decide to increase the price of the model R-24. For model M-11, the previous overhead was overestimated given that it was allocated by labor hours. Under ABC, only €60.00 of the overhead was allocated to every unit of Model M-11. The management might reduce the price of model M-11 to make it more competitive.

4. Advantages: The ABC system better captures the resources needed for model M-11 and model R-24. It identifies all of the various activities undertaken when producing the products and recognizes that different products consume different amounts of activities. Hence, the ABC system generates more accurate product costs.

#### Limitations:

ABC requires continuously estimating cost drivers, updating and maintaining the system, which make the system relatively costly.

A complicated system is sometimes confusing to the top management

Estimation of cost of activities and selection of cost drivers sometime may cause estimation errors which could results in misleading cost information.

#### **Answer: Question 1.5 – Ace Contractors**

1. a. Four types of functional responsibilities that should be performed by different people
  - Authority to execute transactions
  - Recording transactions
  - Custody of assets and
  - Periodic reconciliations
- b. Zhao could execute transactions by initiating a transfer and could record transactions by entering the Joint Venture that was erroneous.

2. Attempted controls

- The company had physical controls over their checks
- The president authorized and signed all checks
- The company maintained pre-numbered check stock.
- The company had a prepared budget to compare to actuals to identify variances

Ways to strengthen

- Restrict fund on-line transfer ability.
- Randomly select audit expense transactions on a periodic basis
- Separate the incompatible duties

3. a. Three internal control objectives

- Effectiveness and efficiency of operations - operations should be as efficient as possible
- Compliance with applicable laws and regulations - care should be taken to follow and be in compliance with all applicable laws and regulations
- Reliability of Financial reporting – financial data should be reliable and timely so that it can be useful for management decisions or outside users.

b. Identify and describe five components of internal control.

Control Environment – sets the tone of an organization, influencing the control consciousness of its people.

Risk Assessment – identify and analyze relevant risks as a basis for management

Control Activities – the policies and procedures that help ensure that management directives are carried out.

Information and Communication

Information – systems support the identification, capture, and exchange of information in a form and time frame that enable people to carry out their responsibilities.

Communication - providing an understanding to employees about their roles and responsibilities.

Monitoring – assesses the quality of internal control performance over time.

4. Describe three ways internal controls are designed to provide reasonable assurance.

- Segregation of duties – assigning different employees to perform functions
- Reconciliation of recorded accountability with assets
- Safeguarding controls – limit access to an organization's assets to authorized personnel.

**Answers: Question 1.6 – Small Parts**

1. A good system of internal control is designed to provide reasonable assurance regarding achievement of an entity's objectives involving effectiveness and efficiency of operations, reliability of financial reporting, and compliance with applicable laws and regulations.

2. Segregation of duties requires that no one person have control over the physical custody of an asset and the accounting for it. There is no evidence to suggest Smallparts makes any effort to account for the value of returned product, which may indeed be significant. The one salesperson seems to be in charge of all aspects related to returned product, including authorizing the returns, crediting the customers, receiving the returns, handling the physical custody, finding new customers, concluding sales, shipping, billing, and collecting. Most of these rules should be separated.
3. A good system of internal control suggests that four functional responsibilities be separated, and handled by different individuals: (i) authority to execute transactions, (ii) recording transactions, (iii) custody of assets involved in the transactions, and (iv) periodic reconciliations of the existing assets to recorded amounts. Smallparts might improve its control over the inventory of returned product by separating these responsibilities among four different individuals.
4. Separate responsibilities and duties. While the salesman may be assigned to work with customers who return products, and find other customers for these products, other staff should post credits to customer accounts following written policy. The products should be received, inventoried, booked and shipped just like regular products.

**Answer: Question 1.7 – Michael Hanson**

1.
  - a. The objective of a compliance audit is to see how financial controls, operating controls conform with established laws, standards, and procedures.
  - b. The objective of an operational audit is to appraise the efficiency and economy of operations, and the effectiveness with which those functions achieve their objectives.
2.
  - a. Transaction processing controls include: passwords to limit access to input or change data, segregation of duties to safeguard assets, control totals to ensure data accuracy.
  - b. Virus protection controls include: ensuring that latest edition of anti-virus software is installed and updated, firewalls set up to deter incoming risks, limit internet access to business-related purposes to reduce chances of viruses.
  - c. Backup controls include identification of vital systems to be backup regularly, development of disaster recovery plan, testing of backup communications and resources
3. A sound disaster recovery plan contains the following components:
  - Establish priorities for recovery process
  - Identification of software and hardware needed for critical processes
  - Identify all data files and program files required for recovery
  - Store files in off-site storage
  - Identify who has responsibility for various activities, which activities are needed first
  - Set up and check arrangements for backup facilities
  - Test and review recovery plan

4. a. Bank deposits not always correspond with cash receipts. Cause: cash received after bank deposits. Action: have a separate individual reconcile incoming cash receipts to bank deposits.
- b. Physical inventory counts sometimes differ from perpetual inventory record, and sometimes there have been alterations to physical counts and perpetual records. Cause: timing differences. Actions: limit access to physical inventory, require and document specific approvals for adjustments to records,
- c. Unexpected and unexplained decrease in gross profit percentage. Causes: unauthorized discounts or credits provided to customers. Actions: establish policies for discounts credits, document approvals.

**Answer: Question 1.8 - Brawn Technology, Inc.**

1. The two fundamental types of internal audits are operational audits and compliance audits.

An operational audit is a comprehensive review of the varied functions within an enterprise to appraise the efficiency and economy of operations and the effectiveness with which those functions achieve their objective. An example would be an audit to assess productivity. Other examples could include an evaluation of processes to reduce rework, or reduce the time required to process paperwork or goods.

A compliance audit is the review of both financial and operating controls to see how they conform to established laws, standards, regulations, and procedures. An environmental audit would be an example of a compliance audit. Other examples of compliance audits could include the review of controls over industrial wastes or the review of procedures ensuring that proper disclosure is made regarding hazardous materials on site.

2. a. A compliance audit would best fit the requirements of the president of Brawn.
  - b. The objective of this compliance audit is to assure the president that the manufacturing facility has appropriate policies and procedures in place for obtaining the needed permits, has obtained all the required permits in accordance with the law, and that environmental and safety issues are being properly addressed.
  - c. The assignment specifically is to address the proper use of permits, compliance with safety regulations, and compliance with environmental standards. These issues can only be properly addressed by conducting a compliance audit. Although financial and operational areas might be involved, they would be secondary to the compliance issues. For example, a financial impact could result from the evaluation of compliance with safety regulations. The findings might result in additional expenditures for safety precautions or a reduction in the company's risk of being fined for lack of compliance.
3. To mitigate the president's concern, the following activities and procedures could be implemented.
    - Set the tone at the top. The president should communicate to all employees that the company expects appropriate business practices on the part of all employees in all divisions.

- Ensure that all employees have the necessary information to perform their duties. Keep the lines of communication open. For example, involve senior managers from the manufacturing facility in monthly operational meetings for the whole company.
- Conduct regularly scheduled audits of compliance with applicable laws, regulations, and standards.
- Periodically review and update policies, rules, and procedures to ensure that internal controls prevent or help to detect material risks. Make sure all employees have access to the relevant policies and procedures. For example, post the policies and procedures on the company's intranet.

**Answer: Question 1.9 – Thompson**

1. The positive and negative behavioral implications arising from employing a negotiated transfer price system for goods exchanged between divisions include the following:

Positive

- Both the buying and selling divisions have participated in the negotiations and are likely to believe they have agreed on the best deal possible
- Negotiating and determining transfer prices will enhance the autonomy/ independence of both divisions.

Negative

- The result of a negotiated transfer price between divisions may not be optimal for the firm as a whole and therefore will not be goal congruent.
- The negotiating process may cause harsh feelings and conflicts between divisions.

2. The behavioral problems which can arise from using actual full (absorption) manufacturing costs as a transfer price include the following:
  - a. Full-cost transfer pricing is not suitable for a decentralized structure when the autonomous divisions are measured on profitability as the selling unit is unable to realize a profit.
  - b. This method can lead to decisions that are not goal congruent if the buying unit decides to buy outside at a price less than the full cost of the selling unit. If the selling unit is not operating at full capacity, it should reduce the transfer price to the market price if this would allow the recovery of variable costs plus a portion of the fixed costs. This price reduction would optimize overall company performance.
3. The behavioral problems that could arise, if Thompson Corporation decides to change its transfer pricing policy to one that would apply uniformly to all divisions, including the following:
  - A change in policy may be interpreted by the divisional managers as an attempt to decrease their freedom to make decisions and reduce their autonomy. This perception could lead to reduced motivation.
  - If managers lose control of transfer prices and, thus, some control over profitability they will be unwilling to accept the change to uniform prices.



- Selling divisions will be motivated to sell outside if the transfer price is lower than market as this behavior is likely to increase profitability and bonuses.
4. The likely behavior of both “buying” and “selling” divisional managers, for each of the following transfer pricing methods being considered by Thompson Corporation include the following:

- a. Standard full manufacturing costs plus a markup

The selling division will be motivated to control costs because any costs over standard cannot be passed on to the buying division and will reduce the profit of the selling division.

The buying division may be pleased with this transfer price if the market price is higher.

However, if the market price is lower and the buying divisions are forced to take the transfer price, the managers of the buying division will be unhappy.

- b. Market selling price of the product being transferred

This creates a fair and equal chance for the buying and selling divisions to make the most profit they can. It should promote cost control, motivate divisional management, and optimize overall company performance. Since both parties are aware of the market price, there will be no distrust between the parties, and both should be willing to enter into the transaction.

- c. Outlay (out-of-pocket) costs incurred to the point of transfer, plus opportunity costs per unit.

This method is the same as market price when there is an established market price and the seller is at full capacity. At any level below full capacity, the transfer price is the outlay cost only (as there is no opportunity cost), which would approximate the variable costs of the goods being transferred.

Both buyers and sellers should be willing to transfer under this method because the price is the best either party should be able to realize for the product under the circumstances. This method should promote overall goal congruence, motivate managers, and optimize overall company profits.

### **Answer: Question 1.10 - Biscayne Industries**

1. Benefits of using a flexible budget are:
  - a. As a planning tool, the flexible budget allows management to estimate income at more than one level of output. This aids in allocating resources and allowing management to plan for sufficient resources to meet its needs.
  - b. As an evaluation tool, actual results are compared with standard costs for actual output. This provides for a fairer comparison and allows for variance computations to better assess performance.
  - c. Make better use of historical budget information to improve future planning.
  - d. As an evaluation tool, comparing actual results to the flexible budget will not hide poor performance. If output is less than budgeted, comparing actual costs for a lower number of units with master-budgeted costs for a greater number of units will most likely yield favorable variances even though cost inefficiencies may have existed.

2. Sales	\$55,000,000
Cost of goods sold:	
Variable costs ( $55,000,000/50,000,000 = 10\%$ increase;	
$30,000,000 - 20,000,000 = 10,000,000$ original VC;	
$10,000,000 * (1+10\%)$	11,000,000
Fixed costs	<u>20,000,000</u>
Gross profit	\$24,000,000
Selling and administrative costs	<u>12,000,000</u>
Operating income	<u>\$12,000,000</u>

3. Three reasons sales increased but income decreased are:
  - a. Fixed costs increased. Increased output could have moved the company outside of its relevant range, causing fixed costs to be higher than budgeted. Increased sales could have been the result of more advertising dollars spent than originally planned.
  - b. The sales price was lowered, resulting in higher total sales but a lower contribution margin per unit. Income decreased because the total increase in sales was not of sufficient volume to be greater than the total increase in variable costs.
  - c. The income statement was prepared using absorption costing. Inventory could have decreased throughout the year, causing fixed manufacturing overhead held in beginning inventory to be expensed during the current year.
  - d. The product mix changed. More units of the low contribution margin products and fewer units of the high contribution margin products were sold than planned.
4. Zero based budgeting: Preparing a budget from the ground up, as though the budget were being prepared for the first time. Alternative means of conducting activities and alternative budget amounts are evaluated. Also, all expenses are justified and fully explained. Every line of item must be approved.

### **Answer: Question 1.11 – Brown Printing**

1. Absorption costing (also called full costing) includes fixed manufacturing overhead cost in the cost of inventory. This method is required by GAAP and has been prepared using the traditional external reporting format (gross margin format). Under this method, the fixed manufacturing overhead was treated as a product cost. Only the portion of fixed manufacturing overhead assigned to the sold units was expensed in the current period.

Variable costing includes only variable costs (direct labor, direct material, variable manufacturing cost) in the cost of inventory. Fixed manufacturing overhead is included in the income statement as a period cost.

2. a. Direct materials \$15 + Direct labor \$6 + Variable manufacturing overhead \$4 = Unit Cost of Goods sold \$25.

b.

Sales	\$900,000
Variable cost of goods sold (\$25 x 10,000 units)	250,000
Variable selling	30,000
Contribution margin	620,000
Fixed manufacturing overhead	240,000
Administrative expenses	<u>160,000</u>
Net income	<u>\$220,000</u>

3. a. The unit cost of goods sold is calculated as follows:  
Direct materials + Direct labor + Variable manufacturing overhead + Fixed manufacturing overhead = \$15 + 6 + 4 + (\$240,000/15,000 books) = \$15 + 6 + 4 + \$16 = \$41.

b.

Sales revenue	\$900,000
Cost of goods sold	<u>410,000</u>
Gross margin	490,000
Selling expenses	30,000
Administrative expenses	<u>160,000</u>
Net income	<u>\$300,000</u>

4. a. Advantages of variable costing
- It makes better sense to expense fixed manufacturing overhead since it will be incurred each period regardless of the number of units sold or produced.
  - No incentive to overproduce inventory because profit is strictly a function of sales volume (not production volume).
  - Better for internal decision making since this method breaks costs out into variable and fixed components.
  - Contribution format supports cost-volume-profit analysis and other short-run decision making.

- b. Limitations of absorption costing
- The fixed manufacturing overhead assigned to the unsold units has been absorbed on the balance sheet as part of the inventory cost.
  - Any difference between the number of units produced and the number of units sold will change the results.
  - This method can lead to managers overproducing inventory to obtain better financial results.
  - This method is not useful for internal decision making since it does not break out variable and fixed costs to support cost-volume-profit analysis.
5. The \$80,000 difference in net income under the two methods represents the value of the fixed manufacturing overhead included ending inventory. 5,000 more books were produced than sold. The fixed manufacturing overhead at \$16 per unit means  $\$16 * 5,000 = \$80,000$  more is included in ending inventory under absorption. Under variable, this \$80,000 is expensed, reducing net income.
6. Throughput costing is known as an extreme version of variable costing. It is also known as super-variable costing. Under throughput costing, direct material is the only inventoriable cost. Direct labor and variable manufacturing overhead are treated as period costs. Fixed manufacturing overhead is treated as a period cost, the same as under variable costing.

**Answer: Question 1.12 - TruJeans**

1. The sales staff has not presented the controller with a unique expected level of sales, but rather sales numbers under various scenarios. The controller could use the expected sales in the budget, which is the summation of the anticipated sales under each scenario times the probability of that scenario. The controller would need to estimate the probability of each scenario in order to complete the task.
2. Under direct costing, fixed manufacturing costs are expensed rather than being added to the inventoriable cost of each unit. Thus, it is not necessary to determine the allocation of fixed costs to individual units.
3. At first glance, job order costing appears to make more sense, as each pair of jeans is literally unique, given that the buyer's name is stitched on the back pocket. However, in reality, process costing should be used, because jeans will be produced continually, and for cost purposes, will be same for each pair.

**Answer: Question 1.13 – Sonimad Sawmill**

## 1. a. Relative sales value method at split-off

<u>Product</u>	<u>Monthly Output</u>	<u>Sales Price</u>	<u>Split-off Value</u>	<u>% of Sales</u>	<u>Allocated Costs</u>
Studs	75,000	\$ 8	\$ 600,000	46.15%	\$ 461,539
Decorative pieces	5,000	60	300,000	23.08%	230,769
Posts	20,000	20	400,000	30.77%	307,692
Totals			<u>\$1,300,000</u>	<u>100.00%</u>	<u>\$1,000,000</u>

## b. Physical output (volume) method at split-off

<u>Product</u>	<u>Monthly Output</u>	<u>% of Output</u>	<u>Allocated Costs</u>
Studs	75,000	75.00%	\$ 750,000
Decorative pieces	5,000	5.00%	50,000
Posts	20,000	20.00%	200,000
Totals	<u>100,000</u>	<u>100.00%</u>	<u>\$1,000,000</u>

## c. Estimated net realizable value method

<u>Product</u>	<u>Monthly Output</u>	<u>Sales Price</u>	<u>Net Value</u>	<u>% of Net Value</u>	<u>Allocated Costs</u>
Studs	75,000	\$ 8	\$ 600,000	44.44%	\$ 444,445
Decorative pieces	4,500 <sup>1</sup>	100	350,000 <sup>2</sup>	25.93%	259,259
Posts	20,000	20	400,000	29.63%	296,296
Totals			<u>\$1,350,000</u>	<u>100.00%</u>	<u>\$1,000,000</u>

Notes:

(1) 5,000 monthly units of output – 10% normal spoilage = 4,500 good units

(2) 4,500 good units x \$100 = \$450,000 – further processing costs of \$100,000 = \$350,000

2. Presented below is an analysis for Sonimad Sawmill comparing the processing of decorative pieces further versus selling the rough-cut product immediately at split-off.. Based on this analysis, it is recommended that Sonimad further process the decorative pieces as this action results in an additional contribution of \$50,000.

	<u>Units</u>	<u>Dollars</u>
Monthly unit output	5,000	
Less normal further processing shrinkage	<u>500</u>	
Units available for sale	<u>4,500</u>	
Final sales value (4,500 units @\$100 each)		\$450,000
Less sales value at split-off		<u>300,000</u>
Differential revenue		150,000
Less further processing costs		<u>100,000</u>
Additional contribution from further processing		<u>\$ 50,000</u>

**Answer: Question 1.14 - Lawton Industries**

1. a. Average investment in operating assets employed:

Balance end of current year	\$12,600,000
Balance end of previous year*	<u>12,000,000</u>
Total	<u>\$24,600,000</u>

Average operating assets employed\*\* \$12,300,000

\*\$12,600,000 ÷ 1.05

\*\*\$24,600,000 ÷ 2

ROI = Income from operations ÷ Average operating assets employed  
= \$2,460,000 ÷ \$12,300,000  
= .20 or 20%

- b. Residual Income:

Income from operations	\$2,460,000
Minimum return on assets employed*	1,845,000
Residual income	\$ 615,000

\*\$12,300,000 x .15

2. Yes, Presser's management probably would have accepted the investment if residual income were used. The investment opportunity would have lowered Presser's ROI because the expected return (18%) was lower than the division's historical returns as well as its actual ROI (20%) for the year just ended. Management rejected the investment because bonuses are based in part on the performance measure of ROI. If residual income were used as a performance measure (and as a basis for bonuses), management would accept any and all investments that would increase residual including the investment opportunity rejected in the year just ended.
3. Presser must control all items related to profit (revenues and expenses) and investment if it is to be evaluated fairly as an investment center by either the ROI or residual income performance measures. Presser must control all elements of the business except the cost of invested capital, that being controlled by Lawton Industries.

**Answer: Question 1.15 Standard Lock**

1. 1) Crosby, the owner is taking a hands-off approach. He is hardly around to check on the business; 2) the two managers Smith and Fletcher have too much control without any independent checks on them; 3) hiring policies to hire the right kind of employees are lacking; Crosby does not screen the job applicants; he did not check any background references for Smith and Fletcher; 4) proper internal controls such as segregation of duties, authorizations, independent checks are not in place. Fletcher places purchase orders, and also receives materials. Crosby is in charge of collecting the payments, maintaining records, reconciling the bank accounts, preparing and signing checks, and approving payments. Lack of basic internal controls seems to have opened the door for employees to commit fraud.
2. Proper internal controls must be in place so that opportunities to commit, and/or conceal fraud are eliminated. In this case, the internal controls needed are: 1) segregation of duties; 2) system of authorizations; 3) independent checks; and 4) proper documentation. No one department or individual should handle all aspects of a transaction from beginning to end. No one person should perform more than one functions recording transactions, and reconciling bank accounts (as done by Crosby in this case). In a similar manner, Fletcher should not authorize purchases, receive inventory and issue materials for production. The company should also separate the duties of preparing and signing checks, especially because the same person has the authority to approve payment.

There is a failure to enforce authorization controls. Crosby should authorize purchases and approve payments. He might consider hiring another person so that the two tasks, record keeping and bank reconciliation can be separated.

In addition to that, the company must have better hiring policies in place, they may require vacations, conduct internal audits and have good oversight of employees.

Require vacations, conduct internal audits, owner/board oversight.

3. Even the best internal controls do not guarantee that fraud will be eliminated. These controls provide reasonable, not absolute, assurance against fraud. Internal controls are not fraud-proof, internal controls never provide absolute insurance that fraud will be prevented. Effectiveness depends on competency and dependability of people enforcing the controls.

**Answer: Question 1.16 – SieCo**

1. SieCo is currently using a plant-wide overhead rate that is applied on the basis of direct labor costs. In general, a plant-wide manufacturing overhead rate is acceptable only if a similar relationship between overhead and direct labor exists in all department, or the company manufactures products which receive proportional services from each department.

In most cases, departmental overhead rates are preferable to plant-wide overhead rates because plant-wide overhead rates do not provide

- a framework for reviewing overhead costs on a departmental basis, identifying departmental cost overruns, or taking corrective action to improve departmental cost control.
  - sufficient information about product profitability, thus, increasing the difficulties associated with management decision-making.
2. In order to improve the allocation of overhead costs in the Cutting and Grinding Departments, SieCo should
    - establish separate overhead accounts and rates for each of these departments.
    - select an application basis for each of these departments that best reflects the relationship of the departmental activity to the overhead costs incurred, i.e., machine hours, direct labor hours, etc.
    - identify, if possible, fixed and variable overhead costs and establish fixed and variable overhead rates for each department.
  3. In order to accommodate the automation of the Drilling Department in its overhead accounting system, SieCo should
    - establish separate overhead accounts and rates for the Drilling Department.
    - identify, if possible, fixed and variable overhead costs and establish fixed and variable overhead rates.
    - apply overhead costs to the Drilling Department on the basis of robot or machine hours.
  4. Because SieCo uses a plant-wide overhead rate applied on the basis of direct labor costs, the elimination of direct labor in the Drilling Department through the introduction of robots may appear to reduce the overhead cost of the Drilling Department to zero. However, this change will not reduce fixed manufacturing expenses such as depreciation, plant supervision, etc. In reality, the use of robots is likely to increase fixed expenses because of increased depreciation expense. Under SieCo's current method of allocating overhead costs, these costs will merely be absorbed by the remaining departments.



**Answer: Question 1.17 – Giga**

1. a. \$200 million depreciated over 10 years, straight line = \$20 million annual depreciation. Increases depreciation expense by \$20 million. The purchase will decrease Cash and increase Gross Fixed Assets by \$200 million. The depreciation expense will increase Accumulated Depreciation, and decrease Net Fixed Assets by \$20 million.
  - b. Long term debt increases by \$75 million. Cash, which is part of Current Assets, will also increase by \$75 million. The annual interest expense is \$75 million x 10% = \$7.5 million.
  - c. Increases Preferred Stock, part of Equity, by \$25 million. Cash, part of Current Assets, will increase by \$25 million. The preferred dividend will increase by \$25 million x 14% = \$3.5 million.
  - d. Common stock, part of Equity, will increase by \$2 par x 4 million = \$8 million. Common stock premium, part of Equity, will increase by \$23 x 4 million = \$92 million. Cash, part of Current Assets, will increase by \$25 x 4 million = \$100 million.
  - e. Revenues increase by \$60 million, operating expenses increase by \$30 million, Cash increases by \$30 million.
2. The revised forecast is as follows.

**Balance Sheet (Thousands of dollars)**

	<u>Original</u>	<u>Changes</u>	<u>Revised</u>
Current Assets	100,000	16,000	116,000
Fixed Assets	750,000	200,000	950,000
Accumulated Depreciation	200,000	20,000	220,000
Net Fixed Assets	550,000	180,000	730,000
<b>TOTAL ASSETS</b>	<b>650,000</b>	<b>196,000</b>	<b>846,000</b>
Current Liabilities	50,000	0	50,000
Long-Term Debt	150,000	75,000	225,000
Stockholders' Equity			
Preferred Stock	50,000	25,000	75,000
Common - Par	100,000	8,000	108,000
Common Premium	200,000	92,000	292,000
Retained Earnings	100,000	(4,000)	96,000
	450,000	121,000	571,000
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>650,000</b>	<b>196,000</b>	<b>846,000</b>

**Income Statement (thousands of dollars)**

	<u>Original</u>	<u>Changes</u>	<u>Revised</u>
Revenue	2,000,000	60,000	2,060,000
Depreciation Expense	50,000	20,000	70,000
Other Expenses	1,775,000	30,000	1,805,000
Earnings Before Interest & Taxes	175,000	10,000	185,000
Interest	15,000	7,500	22,500
Taxes (40% effective rate)	64,000	1,000	65,000
Net Income	96,000	1,500	97,500
Preferred Stock Dividends	5,000	3,500	8,500
Earnings for Common Stock	91,000	(2,000)	89,000

**Answer: Question 1.18 - Borealis Industries**

1. According to the revenue recognition principle in SFAC No. 5, revenue should be recognized (1) when it is realized or realizable and (2) when it is earned.

Realized: when goods or services are exchanged for cash or claims to cash.

Realizable: when assets received for goods or services are readily convertible to known amounts of cash or claims to cash.

Earned: when the seller has substantially completed what it must do to be entitled to the benefits represented by the revenues.

2.
  - a. Percentage-of-completion method: Recognizes revenues, costs, and gross profit as a company makes progress toward completion of a long-term contract. Deferring recognition until the completion of the contract would misrepresent the efforts and accomplishments of the accounting periods during the contract. Generally, progress is measured on a cost-to-cost basis where a company measures the percentage of completion by comparing costs incurred to date with the most recent estimate of the total costs required to complete the contract. To use this method, the following conditions should exist: (1) a firm contract price with a high probability of collection, (2) a reasonably accurate estimate of costs, and (3) a way to reasonably estimate the extent of progress to completion of the project.
  - b. Installment-sales method: Recognizes income in the period of collection rather than in the period of sale. The underlying rationale of this method is that when there is no reasonable approach for estimating the degree of collectability of the sales price, companies should not recognize income until cash is received. Using the installment-sales method, both revenue and costs are recognized in the period of sale but the gross profit related to those periods is deferred until cash is collected.

3. a.

Sandstone Books:

Sales	\$15,000,000
Less returns @ 20%*	<u>3,000,000</u>
Recognized revenue	<u>\$12,000,000</u>

\*Although up to 25% of sales can be returned, prior experience indicates that 20% of sales is the expected average amount of returns. The 19% returns on the initial portion of current sales confirms that 20% of sales will provide a reasonable estimate.

b.

Corus Games:

Sales invoiced	\$ 9,180,000
Total sales to be invoiced	\$10,800,000*
= Completion rate	<u>85%</u>
Total down payments	\$1,200,000
x Completion rate	<u>.85</u>
Down payments recognized	<u>\$1,020,000</u>
Sales invoiced	\$ 9,180,000
Down payments	<u>1,020,000</u>
Recognized revenue	<u>\$10,200,000</u>

\*Orders less down payments (\$12,000,000 - \$1,200,000)

Warranty expense does not generally reduce the revenue recognized, particularly when there is experience on which to estimate the expense. The warranty expense should be accrued at the time of sale. Similarly, commissions are part of the cost of sales and should be expensed at the time of sale.

c.

Sterling Extraction Services:

Percentage-of-completion cost to cost method

Current year costs to date	\$18,000,000
Estimated costs to complete	\$12,000,000
Estimated total costs	\$30,000,000
Percentage complete (\$18,000,000/\$30,000,000)	60%
Contract Price	\$36,000,000
Revenue to date \$36,000,000@ .60	\$21,600,000
Less: Prior year revenue	<u>\$14,400,000</u>
Current year revenue	\$7,200,000
Less Current year expenses	\$8,000,000
Net Profit (Loss) for current year	(\$800,000)

**Answer: Question 1.19 - Bellaton**

1.	Flexible Budget		
Units Sold	€ 18,000		
Revenues	1,530,000	=18,000×(1,360,000/16,000)=18,000×85	
Variable Costs			
Direct Material	(756,000)	=18,000×(672,000/16,000)=18,000×42	
Direct Labor	(270,000)	=18,000×(240,000/16,000)=18,000×15	
Var. Overhead	<u>(144,000)</u>	=18,000×(128,000/16,000)=18,000×8	
Cont. margin	360,000		
Fixed costs	<u>(215,000)</u>		
Operating Income	<u>€ 145,000</u>		

2. a.	Actual Results	Flexible Budget	Variances
Units Sold	€ 18,000	€ 18,000	0
Revenues	1,512,000	1,530,000	(18,000)
Variable Costs			
Direct Material	(792,000)	(756,000)	(36,000)
Direct Labor	(252,000)	(270,000)	18,000
Var. Overhead	<u>(144,000)</u>	<u>(144,000)</u>	<u>0</u>
Cont. margin	324,000	360,000	(36,000)
Fixed costs	<u>(210,000)</u>	<u>(215,000)</u>	<u>5,000</u>
Operating Income	<u>€ 114,000</u>	<u>€ 145,000</u>	<u>(31,000)</u>

- b. Revenues: unit price < €85  
Direct Material: unit purchase price > €42  
Direct Labor: labor rate < €15  
Fixed costs: actual fixed costs lower than expected

3. a. Budgets promote coordination and communication among subunits within the company. They provide a framework for judging performance and they motivate managers and other employees.
- b. Budgets can be time consuming, require everyone's participation, and require adaptability to changing circumstances.

4. a. A responsibility center is a part, segment, or subunit of an organization whose manager is accountable for a specified set of activities. The types of responsibilities centers include:
  - Cost center – manager responsible for costs only
  - Revenue center – manager is accountable for revenues only
  - Profit center – manager is accountable for revenues and costs
  - Investment center – manager is accountable for investments, revenues, and costs
- b. The types of responsibility centers in the example include marketing and facilities departments which are cost centers and the sales operations team which is a revenue center.
5. Sales-volume variance is the difference between flexible budget units and the static budget units multiplied by the budgeted unit contribution margin.  
 Sales-price variance is the difference between actual price and budgeted price multiplied by the actual quantity of input.

**Answer: Question 1.20- Ecoclock**

1. Center D would be charged for the variable cost of the units, plus a portion of the fixed costs equal to the total costs divided by the number of units produced:  

$$\$6 + \$150,000 / 22,500 = \$12.67$$
2. Using a “practical capacity” method, Center A’s fixed costs would be allocated based not on the number of units produced, but rather on the number of units that it is capable of producing (40,000).  

$$\$6 + \$150,000 / 40,000 = \$9.75$$
3. A 2,500 unit reduction in the number of units produced by Center B, would increase the per-unit allocation of fixed costs.  
 Per unit cost based on production of 22,500 units:  

$$\$6 + \$150,000 / 22,500 = \$12.67$$
  
 Per unit cost based on production of 20,000 units:  

$$\$6 + \$150,000 / 20,000 = \$13.50$$
  
 Thus C’s units costs would increase by \$0.83
4. a. Unused central capacity could be not allocated to operating centers, but to some centralized expense. Management could be evaluated by other measures, diluting the overcapacity.
- b. Other evaluation measures could include quality, measured by customer satisfaction, or reductions in returns, warranty claims; financial, measured by reductions in variable costs, increases in sales; innovations; measured by new product features, or manufacturing improvements.

### **Answer: Question 1.21 - Edge**

1. a. Transfer pricing is the price one subunit department or division charges for a product or service supplied to another subunit of the same organization.
  - b. The objectives of transfer pricing are to focus managers' attention on their own subunits and to plan and coordinate actions across different subunits to maximize operating income for the company as a whole. Transfer prices should help achieve a company's strategies and goals and fit its organizational structure. They should promote goal congruence and a sustained high level of management effort. The transfer price should also help top management evaluate the performance of individual subunits and their managers.
- 
2. a. The three main ways to determine transfer prices are as follows:
    - Market based transfer prices – top management may choose to use the price of a similar product or service publicly listed, for example in a trade association web site. Also, top management may select, for the internal price, the external price that a subunit charges to outside customers.
    - Cost based transfer prices – top management may choose a transfer price based on the cost of producing the product in question. Examples include variable production cost, variable and fixed production costs, and full cost of the product. Full cost of the product includes all production costs plus costs from other business functions (R&D, design, marketing, distribution, and customer service). The cost used in cost based transfer prices can be actual cost or budgeted cost. Sometimes, the cost-based transfer price includes a markup or profit margin that represents a return on subunit investment.
    - Negotiated transfer prices. In some cases, the subunits of a company are free to negotiate the transfer price between themselves and then to decide whether to buy and sell internally or deal with external parties. Subunits may use information about costs and market prices in these negotiations, but there is no requirement that the chosen transfer price bear any specific relationship to either cost or market price data. Negotiated transfer prices are often employed when market prices are volatile and change constantly. The negotiated transfer price is the outcome of a bargaining process between selling and buying subunits.
  - b. The advantages and disadvantages to each method are as follows.

Market based transfer prices generally lead to optimal decisions when three conditions are satisfied. The market for intermediate product is perfectly competitive, interdependencies of subunits are minimal and there are no additional costs or benefits to the company as a whole from buying or selling in the external market instead of transaction internally.

    - Achieves goal congruence when markets are competitive
    - Is useful for evaluation subunit performance when markets are competitive.
    - Motivates management effort
    - preserves subunit autonomy when markets are competitive.
    - However, market may or may not exist, or markets may be imperfect or in distress.

Cost based transfer prices are helpful when market prices are unavailable, inappropriate, or too costly to obtain – for example, when the product is specialized or when the internal product is different from the products available externally in terms of quality and customer service.

    - It often but not always achieves goal congruence.

- It is difficult unless transfer prices exceeds full cost and even then is somewhat arbitrary for evaluating subunit performance.
- It motivates management effort when based on budgeted costs, less incentive to control costs if transfers are based on actual costs.
- Does not preserve subunit autonomy because it is rule based
- It is useful for determining full cost of products and services and it is easy to implement

Negotiated transfer prices result from a bargaining process and preserves division autonomy because the transfer price is the outcome of negotiations. Each division manager is motivated to put forth effort to increase division operating income but has a disadvantage of the time and energy spent on the negotiation.

- Achieves goal congruence
- It is useful for evaluating subunit performance but transfer prices are affected by bargaining strengths of the buying and selling divisions.
- It motivates management effort
- It preserves subunit autonomy because it is based on negotiations between subunits
- Bargains and negotiations take time and may need to be reviewed repeatedly as conditions change.

- c. This company should use market based market based transfer prices as market for the products is competitive, interdependencies of subunits are minimal and there are no benefits to the company as a whole from buying or selling in the external market instead of transaction internally.

3. Since management is often evaluated on the basis of subunit profits, they often care deeply about how transfer prices are set. Transfer prices can reduce income tax payments by reporting more income in low tax rate countries and less income in high tax rate countries. However, the tax regulations of different countries restrict the transfer prices that companies can use. Tariffs and customs duties levied on imports can create similar issues. Companies have incentives to lower transfer prices for products imported in to a country to reduce tariffs and customs duties.

4. The four types of responsibilities centers are
  - Cost center – the manager is accountable for costs only
  - Revenue center – the manager is accountable for revenues only
  - Profit center – the manager is accountable for revenues and costs
  - Investment center – the manager is accountable for investments, revenues and costs

**Answer: Question 1.22 - Zavod**

1. The only cost treated differently between the two methods is fixed overhead. Under both methods, direct materials, direct labor, and variable overhead are considered product costs, and are assigned to the units produced. Those costs remain as an asset as the cost of ending inventory on the balance sheet for unsold units. Those costs attached to units that have been sold appear as expenses in the income statement. Under both methods, both variable and fixed selling and administrative costs are expensed as incurred. The only cost treated differently between the two methods is fixed overhead. Under absorption costing, fixed overhead is considered a product cost. Each finished unit absorbs a portion of the fixed overhead cost. Under variable costing, fixed overhead is treated as period cost, and is expensed as incurred.

2. a. Under absorption costing, each unit will be carried in finished goods inventory at \$11.25:

Direct materials	\$4.00 per finished unit
Direct labor	\$3.25 per finished unit
Variable Overhead	\$1.15 per finished unit
Fixed Overhead	<u>\$2.85</u> per finished unit
Total	\$11.25

- b. Under variable costing, each unit will be carried in finished goods inventory at the variable production cost of \$8.40:

Direct materials	\$4.00 per finished unit
Direct labor	\$3.25 per finished unit
Variable Overhead	<u>\$1.15</u> per finished unit
Total	\$8.40

3. a. Absorption costing income statement:

Sales (10,000 x \$32)		\$320,000
Cost of goods sold (10,000 x \$11.25)		<u>112,500</u>
Gross Profit		\$207,500
Selling and administrative		
Variable (10,000 x \$5.00)	\$50,000	
Fixed	<u>81,000</u>	<u>131,000</u>
Operating income		<u>\$ 76,500</u>

- b. Variable costing income statement:

Sales (10,000 x \$32)		\$320,000
Variable cost of goods sold (10,000 x \$8.40)		<u>84,000</u>
Manufacturing contribution margin		\$236,000
Variable selling and administrative (10,000 x 5.00)		<u>50,000</u>
Contribution margin		\$186,000
Fixed costs:		
Overhead (11,000 x \$2.85)	\$31,350	
Selling and administrative	<u>81,000</u>	<u>112,350</u>
Operating income		<u>\$ 73,650</u>



4. In years when the number of units produced is greater than the number of units sold, such as in this first year, absorption costing net income will be higher than variable costing net income because under absorption costing, some of the fixed overhead will be associated with finished goods, an asset on the balance sheet. Under variable costing, all of the fixed overhead is expensed.
5.
  - a. Absorption costing is required under GAAP because in theory, all costs of production should be treated as product costs, associated with finished goods inventory and carried as an asset until the units are sold. Fixed overhead is a necessary cost of production, and is thus treated as an inventoriable cost.
  - b. Variable costing is more appropriate for internal decision making, because it is not affected by the level of production, as is absorption costing. Under absorption, net income will increase as more units are produced due to the inventorying of fixed overhead. Such is not the case under variable costing, where fixed overhead is expensed as incurred.

## Answer to Part 2 Practice Questions

### Answer: Question 2.1 – Foyle Inc.

1. a.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Revenue	100%	100%	100%
Cost of goods sold	60%	50%	60%
Gross profit	40%	50%	40%
Sales & marketing	10%	8.3%	6.7%
General & admin	7.5%	8.3%	10%
Research & development	7.5%	8.3%	3.3%
Operating income	15%	25%	20%

b.

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Revenue	100%	120%	150%
Cost of goods sold	100%	100%	150%
Gross profit	100%	150%	150%
Sales & marketing	100%	100%	100%
General & admin	100%	133%	200%
Research & development	100%	133%	66.7%
Operating income	100%	200%	200%

2.

#### Revenue

Year 2:  $(\$24,000 - \$20,000)/\$20,000 = 20\%$

Year 3:  $(\$30,000 - \$24,000)/\$24,000 = 25\%$

#### Operating income

Year 2:  $(\$6,000 - \$3,000)/\$3,000 = 100\%$

Year 3:  $(\$6,000 - \$6,000)/\$6,000 = 0\%$

3. Foyle's gross profit margin 50% was comparable in Year 2 to competitor 52% and industry average 50%, but Foyle has fallen to 40% in Year 3. Foyle's operating income percentage 25% was the same in Year 2 to competitor and industry average at 25%, but Foyle has fallen to 20% in Year 3.

Foyle in Year 3 has lower Sales and marketing than Competitor and Industry Average (6.7% vs. 11.1% and 10.7%), but higher in General and admin (10% vs. 7% and 8.9%). Foyle's Research and development is substantially below both Competitor and Industry Average (3.3% vs. 8.9% and 5.4%)

**Answer: Question 2.2 – Bockman Industries**

- |                                   | Year 2      | Year 1      |
|-----------------------------------|-------------|-------------|
| 1. Revenues                       | 100.0%      | 100.0%      |
| Cost of Goods Sold                | <u>48.4</u> | <u>47.5</u> |
| Gross Margin                      | 51.6        | 52.5        |
| Selling Expenses                  | 14.8        | 14.7        |
| Administrative Expenses           | 17.5        | 17.5        |
| Loss Due to Strike                | .3          |             |
| Interest Expense                  | <u>.5</u>   | <u>.5</u>   |
| Income before Taxes               | 18.4        | 19.8        |
| Income Tax Expense                | <u>7.4</u>  | <u>7.9</u>  |
| Income from Continuing Operations | 11.1        | 11.9        |
| Discontinued Operations           | <u>1.1</u>  |             |
| Net Income                        | 12.2        | 11.9        |
2. a. Sales increased but the gross margin percentage decreased. This could be caused by:
- a change in the product mix
  - a decrease in the selling price which resulted in selling more units but if the cost per unit did not change or increased, the gross margin percentage would increase
  - an increase in the cost of goods that was not passed along to customers; sales could have increased because competition did raise their prices
- b. Selling expenses remained fairly constant as a percentage of sales. This could be caused by:
- nearly all of the selling expenses being variable costs
  - increased advertising to boost sales
- c. Administrative expenses remained at a constant percentage of sales. Since most of these costs are fixed, when sales rise, the costs as a percentage of sales should decrease. The constant percentage could be caused by:
- moving outside of the relevant range of Year 1's activity, causing step-fixed costs to increase
  - poor budgeting procedures or poor cost controls that allow administrative spending in proportion to sales
3. Number of shares outstanding =  $\$780,000 / \$2.50 = 312,000$   
Book value =  $\$7,363,200 / 312,000 = \$23.60$

**Answer: Question 2.3 – Han Electronic Inc.**

1. a. A merger is the combination of two or more companies in which only one firm survives as the legal entity. An acquisition is when one company acquires another as part of its overall business strategy.

- b. The scenario describes a potential strategic acquisition as management was hoping to work on product mix.
  - c. Some of the synergies of a business combination are the economies realized where the performance of the combined firm exceeds that of its previously separate parts. There are economies of scale where the benefits of size cause the average unit cost to fall as volume increases. Acquisitions can increase sales, market share, or help the company gain market dominance. There may be other marketing and strategic benefits, or the acquisition might bring technological advance to the product table, or it may fill a gap in the product line which would enhance sales made throughout the firm. It may be possible for duplicate facilities to be eliminated after a merger or departments like marketing, accounting, purchasing, and other operations can be consolidated. The sales force may be reduced to avoid duplication of effort in a particular territory. The companies may be able to concentrate a greater volume of activity into a given facility and into a given number of people to have a more efficient utilization of resources.
2. a. A spinoff is a form of divestiture resulting in a subsidiary or division becoming an independent company. Ordinarily, shares in the new company are distributed to the parent company's shareholders on a pro-rata basis. An equity carve-out is a public sale of stock in a subsidiary in which the parent usually retains majority control. Only the spin-off is described in the scenario above.
- b. The spinoff would be if Electronics Inc were to decide to split the subsidiary off into its own separate company.
3. The main types of bankruptcy are chapter 7 – which is liquidation, or the sale of assets of a firm, and chapter 11 which is rehabilitation of an enterprise through its reorganization.

**Answer: Question 2.4 – OnceCo Inc.**

1. The cost to produce the units is irrelevant, because OneCo can sell all that it produces at a market price of \$16.50. The net realizable value per unit is \$15.60 (\$16.50 - .90).

- a) The first option would decrease net income by \$1,600. The net realizable value per unit sold to Gatsby is \$14.00 (\$14.35 - .35). In order to supply Gatsby, OneCo would be displacing sales in the regular market having a NRV of \$15.60. That reduction of \$1.60 per unit X 1,000 units would decrease net income by \$1,600.

Alternate solution: Normal profit per unit is \$4.40 (\$16.50 – \$12.10). The profit per unit sold to Gatsby is \$2.80 (\$14.35 - \$11.55). Gatsby cost is \$11.55 (\$4.00 + \$1.30 + \$2.50 + \$3.40 + .35).

The difference of \$1.60 per unit (\$4.40 – \$2.80) X 1,000 units would decrease net income by \$1,600.

- b) The second option would increase net income by \$1,100. The extra units could be sold in the regular market at a NRV of \$15.60. The cost is \$14.50. Thus, profits would increase by \$1.10 per unit, or \$1,100 in total.

Alternate solution: Selling Price \$16.50 – Cost to purchase from Zelda \$14.50 – Sales commission \$.90 = profit per unit \$1.10. Increase in net income \$1.10 @ 1,000 units = \$1,100.

- c) The third option would decrease income by \$500. Regular business is unaffected. As explained above, the 1,000 units bought cost \$14.50 each, and the NRV of the new units sold is \$14.00. The net difference is .50 per unit.

Alternate solution: Action 1 Decrease in Net Income of \$1,600 + Action 2 Increase in Net income of \$1,100 = Net Decrease in Net Income of \$500.

2. a) Direct Material \$4.00 + \$.30 = \$4.30. Direct Labor \$1.30 @ 1.15 = \$1.495. Variable Overhead \$2.50 @ 1.15 = \$2.875. Cost \$12.42 (\$4.30 + \$1.495 + \$2.875 + \$3.40 + .35). Profit per unit \$4.08 (\$16.5 + \$12.42). Market profit \$4.40 (\$16.50 - \$12.10). Decrease in net income (\$4.08 - \$4.40) = -.32 @ 2,000 = decrease \$640. Do not accept proposal.

- b) If there is excess capacity, accept the proposal, revenue would contribute to fixed costs.

3. Other factors to consider are: the effect on market price/competition, effect on sales force/commissions, quality of Zelda products, and follow-on Gatsby business. There may be other considerations. Some other considerations are: impact on employees; reaction of customers.

### **Answer: Question 2.5 PARKCO**

1.
  - a. Sunk cost is cost already incurred, and thus is irrelevant to the decision at hand.
  - b. Opportunity cost is the profit foregone (given up) by choosing one course of action over another. Only sunk costs are recorded as incurred, because they result from transactions. There is no accounting recording of events that could have happened (opportunity costs), so they are not recorded in the accounting system.
  - c. The costs to buy and clear the land (\$425,000 and \$72,000) would be considered sunk costs, as they have already been incurred. The annual rent that from the construction companies (averaging \$5000) would be considered opportunity costs going forward, because PARKCO would have to give them up.
2.  $\# \text{ of leases} \times (\text{monthly rate} - \text{monthly cost}) = \text{monthly CM}$   
 $420 \times (\$75 - \$12) = \$26,460 \text{ monthly CM}$   
 $\# \text{ of days} \times \text{parkers/day} \times (\text{daily rate} - \text{daily cost}) = \text{daily CM}$   
 $20 \times 180 \times (\$8 - \$2) = \$21,600 \text{ daily CM}$   
  
 $\$26,460 + 21,600 = \$48,060 \text{ total CM}$   
 $\quad \quad \quad \underline{(30,000) \text{ fixed cost}}$   
 $\quad \quad \quad \$18,060 \text{ pretax Operating Income}$
3.
  - a. Honesty, Fairness, Objectivity & Responsibility
  - b. Under Competence: Prepare complete and clear reports and recommendations after appropriate analysis of relevant and reliable information.  
  
Under Integrity: Communicate favorable as well as unfavorable information and professional judgment or opinions.  
  
Under Credibility: Disclose fully all information that could reasonably be expected to influence an intended user's understanding of the reports, comments, and recommendations presented.  
  
Confidentiality – does not apply to this scenario
  - c. The controller has an ethical dilemma. In order to resolve her conflict, she needs to follow her company's policy if one exists. Next she needs to speak to her supervisor or next level above, in this case the CFO. She may need to elevate to the Board of Directors. She may need to discuss with an objective advisor, call ethics helpline, (IMA), or consult with an attorney.

**Answer: Question 2.6 – Bell Company**

1. The net present value is calculated as follows:

New packaging process equipment	\$210,000 x 1.00	\$(210,000)
Sale of existing packaging equipment	\$ 75,000 x 1.00	75,000
Tax benefit from sale	\$ 34,000 x .9090	30,906
Depreciation tax shield - new	\$ 42,000 x .4 x 3.791	63,689
Loss of annual tax shield – old	\$ 40,000 x .4 x 3.170	(50,720)
Annual after-tax savings 10% @ 5 year	\$ 36,000 x 3.791	<u>136,476</u>
Net present value		\$ 45,351

Annual depreciation on old equipment  $\$200,000/5 = \$40,000$

Book value at end of first year  $\$200,000 - \$40,000 = \$160,000$

Loss on sale of old equipment:

Sale price	\$75,000	
Book value	160,000	(\$85,000)

Tax benefit =  $\$85,000 \times 40\%$  tax rate  $\$34,000$

Annual depreciation on new equipment  $\$210,000/5 = \$42,000$

2. The net present value at 10%, the firm's cost of capital, is positive. A positive NPV indicates that the project earns more than the firm's cost of capital, and thus should be accepted.
3. Non-financial and behavioral factors that could cause the company to change the investment decision made solely on the basis of financial terms include:
- Charleson's bonus may be negatively affected by the decision to replace the packaging equipment with the new technology, since the sale yields a short-term accounting loss of \$85,000. Such a loss may cause the Central Division to miss its profit targets, and Charleson to miss his bonus.
  - What kind of a warranty will the new equipment have? Since the technology is new, there may be some risk of it not working reliably.
  - There will be a learning curve and therefore increased training costs.

### **Answer: Question 2.7 – Grandeur Industries**

1. a. & b. The Capital Asset pricing Model (CAPM) when used in an investment analysis context postulates that the return on an investment should be at least equal to the Risk Free Rate plus a Risk Premium. The Risk Premium is based on the risk (volatility) of the investment relative to the overall market (as measured by Beta) times the incremental return on the market above the risk free rate. The model can be expressed as follows;

$$\text{Required Return} = r_f + (r_m - r_f) \times \beta$$

Where:  $r_f$  = the Risk Free rate  
 $r_m$  = return on the market  
 $\beta$  = the Beta value for the investment, a measure of risk

For the various projects:

Project A: Required Return = 4% + (14% - 4%) x 1.4 = 18%

Since the Internal Rate of Return (IRR) of 16% is less than the required 18%, the project should be REJECTED.

Project B: Required Return = 4% + (14% - 4%) x 1.6 = 20%

Since the Internal IRR of 18% is less than the required 20%, it should be REJECTED.

Project C: Required Return = 4% + (14% - 4%) x 0.7 = 11%

Since the IRR of 12%, is greater than the required 11%, it should be ACCEPTED.

Project D: Required Return = 4% + (14% - 4%) x 1.1 = 15%

Since the IRR of 17%, is greater than the required 15%, it should be ACCEPTED.

The capital asset pricing model allows firms (users) to assess the size of risk premium necessary to compensate for bearing risk. It is a way to estimate the required rate of return on a security or investment. Once the required return has been determined it lets the user know of the expected return from the investment is sufficient to warrant acceptance of the investment.

2. a. Beta = Measure of a stock's volatility in relation to market.  
Market beta = 1 A stock that moves > market, beta > 1; if < market, < 1.  
High beta stocks are riskier but potential for higher returns & vice versa.
- b. Factors that have an influence on the Beta value for a project include:
- The industry that the Division undertaking the project is in and its risk characteristics.
  - Experience the division has with similar projects, if any.
  - Ability of the Division to realize estimated returns on projects in the past.
  - Strength of the management team of the division.
  - Level of competition expected.



- The geographical location of the project. Certain countries are more risky to operate in than others.
  - The degree to which the project involves new technology or unproven operating conditions.
3. a. Informal method. NPVs are calculated at the firms' desired rate of return, and the possible projects are individually reviewed.
  - b. Risk-adjusted discount rates. Adjusting the rate of return upward as the investment becomes riskier
  - c. Certainty equivalent adjustments. Decision maker needs to specify the indifferent point to choice between a certain sum of money and the expected value of a risky sum.
  - d. Simulation analysis. Based on different assumptions, computer is employed to generate many examples of results.
  - e. Sensitivity analysis. Forecasts of NPVs under different scenarios are compared to each other to evaluate how assumption changes about a certain variable may alter the NPV.

**Answer: Question 2.8 – Orion Corp.**

1. The weighted average cost of capital for the firm can be computed as follows.

	Market Value	Proportion	Cost
<b>Bonds</b>	\$10,400,000 <sup>1</sup>	0.26	5.0 <sup>3</sup>
<b>Common Stock</b>	\$29,600,000 <sup>2</sup>	0.74	14.0 <sup>4</sup>
<b>Totals</b>	\$40,000,000	1.00	

(1).  $10,000 \times 1040.00 = \$10,400,000$ .

(2).  $2,000,000 \times \$14.80 = 29,600,000$ .

(3).  $\text{Price} = \$1040.00 = \frac{92.00 + 1000.00}{(1 + k_d)}$ .

$$\text{So, } k_d = \frac{1092}{1040} - 1 = 5\%.$$

(4).  $k_e = \frac{D_1}{P_0} + g = \frac{1.48}{14.80} + 0.04 = 14.0\%$ .

$$\text{WACC} = 0.26 \times 0.05(1 - 0.3) + 0.74 \times 0.14 = 11.27\%.$$

2. The ranking of projects based on the net present value, which is the preferred criterion, is as follows.

Project	Initial Outlay	IRR	NPV
E	\$240,000	16.50%	\$22,500
A	\$450,000	17.00%	\$18,800
C	\$262,000	16.20%	\$9,800
B	\$128,000	19.50%	\$2,300
F	\$160,000	11.10%	-\$900
D	\$180,000	10.50%	-\$7,000

So, the firm should accept projects E, A, C and B. The reason for using the *NPV* is that this criterion maximizes the value of the firm while using the *IRR* can give misleading results.

3. The weighted average cost of capital cannot be used to evaluate the project because it is not in the same line of business as the firm's current operations. It is likely that the project would alter the firm's business risk in which case using the weighted average cost of capital would be inappropriate. The firm should use a project-specific hurdle rate that reflects the project's systematic risk.
4. Based on the CAPM, the project's hurdle rate =  $0.05 + 0.10 \times 1.5 = 20\%$ .  
The project's net present value is:

$$NPV = ((\$60,000 * .833) + (\$80,000 * .694 + (\$80,000 * .579) + (\$80,000 * .482)) - \$200,000 = -\$9620.00$$

Since the *NPV* is negative the project should be rejected.

5. a. The project's payback period =  $2 + 60/80 = 2.75$  years.  
Based on the threshold payback period that the firm uses it would accept the project because  
the firm recovers its initial investment in less than 3 years.
- b. The project should be rejected because it has a negative *NPV*. The payback period leads to a sub-optimal decision because it ignores the time value of money. The payback period also ignores the cash flows in later years but in this case even with year 4's net cash flows the project's *NPV* remains negative.

### **Answer: Question 2.9 – Global Manufacturing**

1. Yes, under the standards of “competency” and “objectivity,” Hammon must “maintain an appropriate level of professional competence” to analyze the nature of the technical problem. She must also prepare “complete and clear reports” to management, and after appropriate analysis, report to them “relevant and reliable information” about what she believes may explain the inventory unusual inventory write-downs.

The standard of professional competence requires Hammond to determine what may explain the write-down based on available information. It also requires members to “perform their professional duties in accordance with relevant laws, regulations and technical standards” and to “prepare complete and clear reports and recommendations after appropriate analysis of relevant and reliable information has been performed.”

Under the standard of integrity, she needs to refrain from either actively or passively subverting the attainment of the organization’s legitimate and ethical objectives. Under objectivity, she would have a responsibility to communicate the information she found fairly and objectively

2. According to the Standards of Ethical Conduct, Hammon should follow the guidelines established by the organization to resolve such ethical dilemmas. If such do not exist, or fail to resolve the dilemma, she should follow the chain of command by going to her immediate superior, which in this case would appear to be the division controller. If this is not successful, she should proceed up the chain of command until the dilemma is resolved. This would include the CEO of the division as well as the controller of Canadian parent company.

She should not disclose the nature of such problems unless it is legally prescribed to anyone who is not an employee or one who is engaged by the organization. Hammon should clarify the relevant ethical issues by confidential discussion with an objective advisor (e.g. IMA Ethics Counseling Service) to obtain a better understanding of possible courses of action. She should consult her own attorney as to her legal obligations and rights concerning the ethical conflict. However, in this case, since a distortion of the financial statements or a similar situation does not appear to exist, this step may not be necessary.

Finally, if the ethical conflict exists after exhausting all level of internal review, she may have no other recourse on significant matters than to resign from the organization and submit an informative memorandum to an appropriate representative of the organization. While it is unlikely in this situation, since it does not appear that external fraudulent financial reporting exists, and depending on the nature of the overall nature and extent of the ethical conflict, it may also be appropriate to notify other parties.

**Answer: Question 2.10 - Cambridge Automotive Products**

1. The analysis shown below yields the following after-tax incremental cash flows:

- a. Period 0 (\$13,200,000)  
 b. Period 1 4,200,000

<u>Cash Flow Element</u>	<u>Year</u>				<u>\$ Millions</u>
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Revenue		\$16.0	\$20.0	\$20.0	\$20.0
Equipment	(\$12.0)				
Equipment Salvage					\$0.9
Equipment Removal					(\$1.4)
Direct Labor & Materials		(\$8.0)	(\$10.0)	(\$10.0)	(\$10.0)
Indirect Costs		(\$3.0)	(\$3.0)	(\$3.0)	(\$3.0)
Net Working Capital	(\$1.2)				\$1.2
Total Cash Flow Before Tax	(\$13.2)	\$5.0	\$7.0	\$7.0	\$7.7
Cash Taxes		(\$0.8)	(\$1.6)	(\$1.6)	(\$1.4)
Net Cash Flow, After Tax	(\$13.2)	\$4.2	\$5.4	\$5.4	\$6.3

**Memo: Calculation of Cash****Taxes**

Tax Profit Before Tax & Depreciation	\$5.0	\$7.0	\$7.0	\$6.5
Tax Depreciation	(\$3.0)	(\$3.0)	(\$3.0)	(\$3.0)
Tax Profit Before Tax	\$2.0	\$4.0	\$4.0	\$3.5

c. The Period 4 operating cash flow is \$5,400,000 calculated as follows.

Revenue	\$20,000,000
Direct labor & material	(10,000,000)
Indirect costs	<u>(3,000,000)</u>
Before tax cash flow	7,000,000
Tax effect <sup>1</sup>	<u>(1,600,000)</u>
After tax cash flow	<u>\$ 5,400,000</u>

<sup>1</sup> \$7,000,000 - \$3,000,000 = \$4,000,000 x 40% = (\$1,600,000)

d. The Period 4 terminal cash flow is \$900,000 calculated as follows.

Equipment removal	(\$1,400,000)
Salvage	900,000
Working capital recovery	<u>1,200,000</u>
Before tax cash flow	700,000
Tax effect <sup>2</sup>	<u>200,000</u>
After tax cash flow	<u>\$ 900,000</u>

$$^2 \$700,000 - \$1,200,000 = (\$500,000) \times 40\% = \$200,000$$

2. Cash flow variables with potential risks that could affect the estimates made by CAP include the following.

- Volume estimates are generally subject to a high degree of estimation error due to the variety of external factors that impact the volume realized in the future. Competitive forces, consumer acceptance of the new product, general economic conditions are just a few of the factors that could influence the ultimate demand realized for the new car by KAC, which would impact the demand for ignition system modules from CAP. Since there are a number of fixed costs, including equipment and indirect costs, deviations in volume could have a significant impact on the cash flows and the financial success of the project.
- Exchange rates are another important variable. Since CAP is a U.S. company with a cost structure consisting of U.S. dollar denominated expenses, there is exchange risk resulting from a revenue stream in the Korean Won. The net cash flows from the project in U.S. dollars will be dependent on the exchange rate in effect when each of the KRW denominated payments is received.
- Direct costs are another potential variance given that the actual productivity of its workforce, the reliability of its manufacturing systems, and unit materials costs could vary substantially from what CAP projects. In a competitive bidding situation, there may be pressure to bid as low as possible to increase the chances for success. If the firm has used “best case” assumptions for its cost structure, negative variances in the assumptions for direct costs could decrease the amount of cash flow generated from the project relative to expectations.
- The estimates for the cost of the equipment removal and the salvage value of the equipment could vary significantly as these costs will occur several years in the future and could negatively impact the expected cash flow.

**Answer: Question 2.11 - City of Blakston**

1. The contribution margin is 75%<sup>1</sup> or \$3.75 per adult admission, and \$1.875 per student admission. The mix is 20% adult (30 ÷ 150) and 80% student (120 ÷ 150). The weighted average contribution margin is:

$$\text{WACM} = .20(\$3.75) + .80 (\$1.875) = \$2.25$$

The breakeven point is Fixed cost ÷ WACM

$$\$33,000 \div \$2.25 = \underline{14,667 \text{ per season.}}$$

<sup>1</sup> 100% - state fee of 10% - variable cost of 15%

2. The highest number to break even assumes that all admissions are students:

$$\$33,000 \div \$1.875 = 17,600 \text{ per season}$$

3. The lowest number to break even assumes that all admissions are at the adult rate:

$$\$33,000 \div \$3.75 = 8,800 \text{ per season}$$

**Answer: Question 2.12 - Carroll Mining and Manufacturing**

1. The standards from IMA's Statement of Ethical Professional Practice that specifically relate to Alex Raminov and the situation at Carroll Mining and Manufacturing are the following.

Competence

Perform professional duties in accordance with relevant laws, regulations, and technical standards. It appears that CMMC is not in compliance with the relevant laws and regulations regarding the dumping of toxic materials; at a minimum, Raminov has an obligation to report this situation to higher authorities in the company.

Confidentially

Keep information confidential except when disclosure is authorized or legally required. This standard may or may not relate to the CMMC situation depending on the requirements of the environmental regulations in effect in the jurisdiction where CMMC is operating. Raminov may be required by law to disclose the information.

### Integrity

Refrain from engaging in any conduct that would prejudice carrying out duties ethically.

Abstain from engaging in or supporting any activity that might discredit the profession.

If Raminov does not report the apparent illegal dumping to those in authority at CMMC, his behavior would not be considered ethical under these standards and his lack of action would discredit the profession.

### Credibility

Communicate information fairly and objectively.

Disclose all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, analyses, or recommendations.

Disclose delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.

All of these standards make it clear that Raminov has an obligation to act objectively in this matter and report the situation to those in authority at CMMC. The risks and exposures of illegal dumping should be disclosed in the financial reports that Raminov is preparing.

2. Initially, Raminov should follow CMMC's policy regarding the resolution of an ethical conflict. If there is no policy or the policy does not resolve the issue, he should consider the courses of action recommended in IMA's Statement of Ethical Professional Practice.

Since Raminov's immediate supervisor appears to be involved in the dumping situation, he should submit the issue to the next higher level. If the situation is not satisfactorily resolved, Raminov should approach successive levels of authority, e.g., CFO, audit committee, Board of Directors. He can also contact an IMA ethics counselor or other impartial advisor to discuss possible courses of action. Raminov should consult an attorney regarding his legal obligations and rights in this ethical conflict.

3. It is not considered appropriate for Raminov to inform authorities or individuals not employed or engaged by CMMC unless he believes there is a clear violation of the law. In discussions with his attorney, Raminov should clarify his obligations under the law. If CMMC does not take action after Raminov has informed the appropriate in-house authorities, he may be obligated to inform the regulatory agency involved. He should not under any circumstances anonymously release this information to the local newspaper.

**Answer: Question 2.13 - Langley Industries**

## 1. Financing plan (dollars in millions):

	Current structure	Percent of total	Funds Needed	Retained earnings	External sources
Debt	\$175	35%	\$28		\$28
Preferred	50	10%	8		8
Common	275	55%	44	\$15	29
Totals	\$500	100%	\$80	\$15	\$65

Financing sources will be as follows:

New Debt	\$28 million
New Preferred stock	8 million
Retained earnings	15 million
New Common stock <sup>1</sup>	<u>29 million</u>
Total	<u>\$80 million</u>

<sup>1</sup> \$29 million ÷ \$58 per share = 500,000 new common shares

## 2. Weighted average cost of capital

	% of Capital Structure	Cost	Weighted Cost
Debt	35%	6.00% <sup>1</sup>	2.10%
Preferred	10%	12.00%	1.20%
Common	55%	16.00%	8.80%
Cost of Capital			12.10%

<sup>1</sup> Pre-tax 10% x (1 - tax rate) = 6.00%

3. a. If the corporate tax rate was increased, the after-tax cost of debt would be reduced, thereby reducing the cost of capital. In other words, the tax shield of debt becomes more valuable to the firm.
- b. When the banks indicate they are raising rates, the rest of the debt market generally raises rates. The higher cost of debt will increase the overall cost of capital.
- c. Beta is a measure of risk. According to the Capital Asset Pricing Model, the cost of equity is directly related to risk. As risk is reduced the cost of equity is reduced and correspondingly the overall cost of capital is reduced.
- d. In general, a significant increase in the percent of debt in the capital structure (especially in this case where the current structure is deemed optimal), results in more risk for the firm. This increases its cost of debt and its cost of equity. The increase in the cost of equity will most likely offset the fact that debt has a lower relative. The result here is that the cost of capital should increase.



**Answer: Question 2.14 - Sentech Scientific Inc.**

1. Liquidity is the ability of an asset to be converted into cash without significant price concessions. Liquidity is important to Sentech because current obligations will continue if there is a strike. Understanding the company's ability to meet its obligations even if normal cash receipts are not forthcoming would give management an indication of whether or not – and for how long – it could weather a strike. Lack of liquidity can limit a company's financial flexibility, making it unable to take advantage of discounts and other profitable opportunities. Liquidity problems can also lead to financial distress or bankruptcy.
2. Measures of liquidity include the following.
  - Current ratio: current assets/current liabilities
  - Quick ratio (or acid-test ratio): (cash + marketable securities + accounts receivable)/current liabilities. The quick ratio excludes inventory and prepaid expenses from cash resources.
  - Cash ratio: (cash + marketable securities)/current liabilities
  - Only cash and securities that are easily convertible into cash are used.
  - Net working capital: current asset – current liabilities
  - Net working capital ratio: net working capital/total assets
  - Sales to working capital: sales/average net working capital
  - Accounts receivable turnover: net sales/average gross receivables
  - This ratio can also be calculated in days.
  - Inventory turnover: cost of goods sold/average inventory
  - This ratio can also be calculated in days.
3. Based on the parameters set down by the controller, either the quick ratio or the cash ratio would be best. The reason that these ratios are best is because they focus on the most liquid assets, excluding prepaid expenses and inventories. During a strike inventories would not be a source of cash. The cash ratio excludes receivables as well, and would be the most conservative measure. The cash ratio would reflect the fact that the collection of receivables would be slowed during a strike.

**Answer: Question 2.15 - Ultra Comp**

1. Net present value of each of the alternatives

	Time	Amount	14% PV Factor	Present Value
Vendor A				
Initial investment	0	\$4,000,000	1.000	\$4,000,000
Annual cash outflow	1-6	500,000	3.889	1,944,500
NPV				\$5,944,500
Vendor B				
Initial investment	0	\$1,000,000	1.000	\$1,000,000
Replacement	3	1,250,000	0.675	843,750
Annual cash outflow	1-6	750,000	3.889	2,916,750
NPV				\$4,760,500
Vendor C				
Annual cash outflow	1-6	\$1,400,000	3.889	5,444,600
NPV				\$5,444,600

2. Ultra Comp should select Vendor B. It is the optimal choice from a financial point of view as it meets the requirements at the lowest cost. Since the decision has already been made to implement a new security system, the issue is to decide on a system that meets the requirements at the lowest cost.
3. Sensitivity analysis is a tool to test the impact of changing investment assumptions on the resulting net present values. The method helps determine the “sensitivity” of outcomes to changes in the parameters. It shows how the output of the model depends on the input of the model.
4. Non-financial factors that Ultra Comp should consider prior to making a recommendation include the following.
- Vendor A technology may be more effective in the long term even though it is the highest cost solution. However, there is a risk involved in the fact that this is new technology and may not prove effective.
  - Vendor B technology is known to be effective and should be satisfactory for the near term. However, there is uncertainty in the long term.
  - Since Vendor C is a nationally recognized leader, it may be in a better position to manage the security of Ultra Comp, especially as new developments arise.
  - Ultra Comp should review the management capability and the financial stability of each of the vendors.
  - Ultra Comp should contact previous clients of each of the vendors to determine their level of satisfaction with the quality and customer service of each vendor.

**Answer: Question 2.16 – Right-Way**

1.  $500,000 + 3,500,000 + 100,000 + 100,000 + (50,000 * (1-.35)) = \$4,232,500$  million.
2. The scenario tells us that the after tax operating income is \$1,200,000. We find the depreciation expense by dividing the building cost into the depreciation period,  $\$3,500,000 / 20 = \$175,000$  annual depreciation expense.

Assuming the interest on the mortgage is not considered when we discount a cash flow, or it is included in (taken out to arrive at) the \$1.2 million, and no change in working capital, we can calculate the Cash Flow three ways:

- a. Simply add the \$1,200,000 and the \$175,000 to get \$1,375,000.
  - b. Find total net income:  $\$1,200,000$  after tax operating income  $/ 1-.35 = \$1,846,150$  taxable income. The tax on this is 646,154, getting us back to 1,200,000 net income. Add back the 175,000 depreciation to get \$1,375,000.
  - c. Use depreciation tax shield: Start with the \$1,846,154 taxable income. Adding the 175,000 depreciation, we get before tax cash flow of \$2,021,154. The tax on this is 707,404, but the depreciation tax shield is 61,250, resulting in 1,375,000 cash flow.
3. The factor for a five year annuity, at 12% from our table is 3.605. So the value of 5 years' of cash flow is \$4,956,875. But the store will open, and cash flows will start 1 year after spending the zero period costs, so this value needs to be discounted one more year, to \$4,425,781.

The NPV is  $\$4,425,781 - 4,232,500 = \$193,281$ .

4. Yes, Right-Way should build the store. The positive NPV (even ignoring values past 5 years) will add to the value of the company. The benefit of the future cash flows is greater than the costs to open to the store.
5. Sensitivity analysis shows how much small changes in the inputs affect the decision. Especially if we had a computer, we could try other assumptions about the store's forecast after tax operating income, the input with the most uncertainty. The costs of construction may also be underestimated, even the tax rate and the hurdle rate may possibly change of the next five years. How much will these have to change to turn a successful, positive NPV store, into an unsuccessful negative NPV store?

**Answer: Question 2.17 - Hi-Quality Productions**

1. The standards from IMA's Statement of Ethical Professional Practice that specifically relate to Amy Kimbell and the situation at Hi-quality Productions are the following.

### Competence

Provide decision support information and recommendations that are accurate, clear, concise, and timely.

Recognize and communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.

Amy Kimbell has an ethical conflict because she has been told to “keep quiet” about errors she has discovered in the original budgeting process. The incorrect data used makes the decision support data provided suspect and the decisions made based on that data risky.

### Integrity

Refrain from engaging in any conduct that would prejudice carrying out duties ethically.

Abstain from engaging in or supporting any activity that might discredit the profession.

Amy Kimball has an ethical conflict as she has an obligation to disclose the errors in the budgets presented but has been told not to. If she does not correct the situation, she will not be carrying out her duties ethically and therefore will discredit her profession.

### Credibility

Communicate information fairly and objectively.

Disclose all relevant information could reasonably be expected to influence an intended user’s understanding of the reports, analyses, or recommendations.

It is clear that the budget committee has not been objective in its presentation of information and therefore has distorted the decisions based on that information. Kimbell should correct the information so that future expectations are realistic.

2. Initially, Kimbell should follow Hi-Quality Productions’ policy regarding the resolution of an ethical conflict. If there is no policy or the policy does not resolve the issue, she should consider the courses of action recommended in IMA’s Statement of Ethical Professional Practice.

Kimbell should present her findings to her immediate supervisor. If her immediate supervisor is involved in the incorrect budgeting situation or if the supervisor takes not action, she should submit the issue to the next higher level. If the situation is not satisfactorily resolved, Kimbell should approach successive levels of authority, e.g., CFO, audit committee, Board of Directors. She can also contact an IMA ethics counselor or other impartial advisor to discuss possible courses of action. Kimbell should consult an attorney regarding her legal obligations and rights in this ethical conflict.

**Answer: Question 2.18 – Madison**

1. Colby Quote based on Budget Proportions

Revenue	Budget \$17,050,000	Colby Quote
Direct Labor		
Hours	300,000	10,000
Rate per hour	20	20
Total Amount	6,000,000	200,000
Employee Benefits	2,400,000	
Percent of Direct Labor	40%	40%
Total Amount		80,000
Tools and Equipment	1,800,000	
Percent of Direct Labor	30%	30%
Total Amount		60,000
Materials	2,000,000	200,000
Procurement & Handling	200,000	
Percent of Material Cost	10%	10%
Total Amount		20,000
Subtotal	12,400,000	560,000
Overhead	3,100,000	
Percent of Above Costs	25%	25%
Total Amount		140,000
Total Cost	\$15,500,000	700,000
Pretax Profit		
Percent of Total Cost	10%	10%
Total Amount		70,000
Amount of Colby Quote		<u>\$770,000</u>

2. Madison's performance measurement system can be expected to produce the following benefits:

- Aligning the performance measurement system with the budget results in everyone working toward the same goals and targets.

- Focusing on earning a profit on each job provides incentives to managers to continually be cost conscious.
- If the firm is profitable, then employees will be able to share in the rewards. When the firm is not profitable, it does not have the expense of bonuses.

Drawbacks to such a system include the following:

- If the budget is revised during the year, the firm faces the dilemma of changing the performance measures, often upsetting employees.
- Although the overall target of 10% may be reasonable, a firm such as Madison cannot expect every project to earn 10%. Focusing on all projects completed during the year may be more realistic.
- Utilizing company average percentages for various cost elements may not be appropriate for all projects. For example, some projects may utilize a significant amount of equipment (as a percent of labor) compared to other projects. A more appropriate way to charge for major equipment may be to have a rate per day (or per hour, as appropriate) for such equipment and charge the customer based on the number of days (or hours) utilized.

3. Factors that David Burns should consider include:

- The overall workload for the firm. If there are other more profitable projects that could be undertaken, then possibly this project should be turned down. On the other hand, if there are no other alternative projects, this one could be advantageous even though it does not show a 10% profit.
- Mr. Burns should identify the primary out of pocket (incremental, or marginal) costs for the project, and compare that to the contract amount. If the out of pocket costs exceed the contract amount, the job should be rejected. If the out of pocket costs are less than the contract amount, then Madison would receive some contribution toward fixed costs. Direct Labor (\$200,000), Benefits (80,000), and Materials (\$200,000) are the primary incremental costs in this case and amount to \$480,000. This leaves \$215,000 (695,000 less 480,000) to cover other costs, most of which are primarily fixed.
- Mr. Burns should assess the importance of a relationship with Colby. If Colby is a critical customer, that would influence the decision. Also, if Colby has not been a customer before, then it may be important to take the job for strategic reasons and establish a relationship, even if this first job does not meet the target profit.
- Of course, Mr. Burns will be considering the impact on his performance of accepting a project with a less than 10% profit. However, he should place the interests of his employer above his own in making a decision on whether to accept the contract.

4. Reasons that Burns can use to justify his decision include:

- Strategic value of having Colby as a customer
- Other more profitable opportunities were not available.
- This project involved a significant amount of material costs that are a pass through to the customer. Therefore, the practice of adding 25% for company overhead is not totally appropriate in this case.

**Answer: Question 2.19 – GRQ Company**

1. Under *Competence*, Spencer has a responsibility to “maintain an appropriate level of professional competence.” He must perform his duties in accordance with relevant laws, regulations and technical standards, e.g. FASB No. 5 – Accountancy for Contingencies.

Under *Confidentiality*, he must keep information confidential except when disclosure is authorized or legally required and inform his subordinates of the same requirement. He must refrain from using or appearing to use confidential information for unethical or illegal advantage personally.

Under *Integrity*, Spencer must “avoid actual or apparent conflicts of interest and advise all appropriate parties of any potential conflict.” He must also “refrain from engaging in any activity that would prejudice his ability to carry out his duties ethically.” He should also “refrain from engaging in any activity that would discredit the profession.”

Finally, under *Credibility*, Spencer must “communicate information both fairly and objectively.” He should “disclose fully all relevant information that could reasonably be expected to influence an intended user’s understanding of the reports and recommendations presented.”

2. According to IMA’s Statement of Ethical Professional Practice, Spencer should first follow the established policies of the organization he is employed by in an effort to resolve the ethical dilemma. If such policies do not exist, or are not effective, he should follow the steps as outlined in “Resolution of Ethical Conflict”.

First, he should discuss the problems with his immediate superior except when it appears the superior is involved. Since his superior is the CFO, who gave him the instructions to ignore the situation and not consider the financial ramifications of non-disclosure, he should proceed to the next higher level, which is the CEO of GRQ company. If this step is not successful in solving the dilemma, he should proceed up the chain of command, which in this case would appear to be the Board of Directors of GRQ.

However, he should note that except where legally prescribed, communication of such internal problems should not be discussed with authorities or individuals not employed or engaged by the organization.

Spencer should clarify relevant ethical issues by confidential discussion with an objective advisor (e.g. IMA Ethics Counseling Service) to obtain a better understanding of possible courses of action. He should consult his own attorney as to his legal obligations and rights concerning the ethical conflict.

(\*) – According to the provisions of the Sarbanes-Oxley Act of 2002 (SOX) , employees are to be provided with a means to report such matters to top management of the organization, and when deemed appropriate, may report these matters to the appropriate external parties (e.g. SEC, Justice Department, EPA, etc.) as the matter dictates. Candidates should be given some credit for being aware of this provision made by SOX.

**Answer: Question 2.20 – CenturySound**

1. According to the Statement of Ethical Professional Practice , Wilson in this situation has a responsibility to demonstrate
  - Competence by preparing complete and clear reports and recommendations after appropriate analyses of relevant and reliable information.
  - Confidentiality by refraining from disclosing confidential information acquired in the course of their work except when authorized, unless legally obligated to do so.
  - Integrity by communicating unfavorable as well as favorable information and professional judgments or opinions as well as refraining from engaging in or supporting any activity that would discredit the profession.
  - Objectivity by communicating information fairly and objectively and disclose fully all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, comments and recommendations presented.
2. Wilson should first discuss this matter with his superior, the Controller, unless his superior is involved in which case he should go to the next managerial level. If a satisfactory solution cannot be reached with his superior, Wilson should move up the chain of command. Unless his superior is involved, Wilson should inform his superior when he goes to higher levels of management. If his superior is the CEO, Wilson should go to an acceptable reviewing authority such as the audit committee, executive committee, board of directors. Wilson can clarify ethical issues by having a confidential discussion with an objective adviser (e.g. IMA Ethics Counseling Service) to determine a possible course of action. He may also consult with his own attorney. If Wilson is unable to resolve the ethical dilemma there may be no other course than to resign and submit an informative memorandum to an appropriate representative of the organization.



**Answer: Question 2.21-RomCo**

1. a. The cost of equity and the weighted average cost of capital will be one and the same with an all-equity financed corporation. Because the NPV happens to be \$0 for Project 1 we know that the IRR is equal to the cost of capital (cost of equity in this case) so 12%. We can also calculate the cost of capital (equity) as 12% by using the second project.  
  
b. Increasing the cost of equity would lower the present value of the future cash flows for both projects. This would lower the NPV of both of them. The \$0 NPV project would become negative (so rejected). The positive NPV project would become lower. If still positive it would be accepted, if it becomes negative, rejected. Changing the cost of equity would have no impact on the IRR (since the cash flows are not affected). The increasing cost of equity, however, would similarly make project 1 undesirable because the  $IRR < \text{cost of equity}$ , and for project 2 the result is ambiguous because we would need to know how much higher the cost of equity is to know what it is relative to the IRR of 17.65%.
2. A lowering of the corporate tax rate increases the future after-tax cash flows. This would increase the NPV and IRR of both projects. Project 1 would now have a positive NPV and an  $IRR > \text{cost of capital}$ . Project 2 would still have a positive (though larger) NPV and still have an  $IRR > \text{cost of capital}$ . This assumes that the lowering in income tax rate does not change the cost of equity.
3. a. The payback periods (undiscounted) can be found by dividing the annual cash flow into the initial investment for each project. Thus:  
Project 1:  $822,800/200,000 = 4.1$  years  
Project 2:  $300,000/85,000 = 3.5$  years  
  
b. The three weaknesses of payback period are  
(1) PP ignores cash flow after the calculated payback period.  
(2) PP does not discount future flows  
(3) Choice of cut-off (e.g. do project only if  $PP < 3$  years) is arbitrary

**Answer: Question 2.22 - Kolobok**

1. Target costing is focused on market pricing or the prices of a firm's most direct competitors. The process for determining product pricing involves the following five steps: (1) determine the market price, (2) determine the desired profit, (3) calculate the target cost at market price less the desired profit, (4) use value engineering to identify ways to reduce product cost, and (5) use continuous improvement and operational controls to further reduce costs and increase profits.
2. The main difference between the two methods of pricing is a different starting point for determining product price. Mark-up pricing is based on existing costs and a desired return. The price is then determined by adding the product cost and the desired mark-up. This method provides little incentive to reduce costs as long as sales are profitable.

Using target costing, product prices are determined by reviewing competitive pricing and setting prices according to market strategies and positioning. Target costing moves from the existing market prices to the process of managing the product costs in order to earn a desired return. Target costing motivates process improvements. The process is intended to increase or maintain sales while increasing product profitability by reducing product costs through the elimination of non-value added activities.

3. Calculate earnings before taxes:

Sales*	\$2,528,100	
Less material & labor	1,223,400	(1,348,400 – 125,000)
Less overhead	<u>375,000</u>	(500,000 x .75)
Contribution	929,700	
Selling expense	250,000	
Admin expense	180,000	
Interest expense	<u>30,000</u>	
Earnings before taxes	<u>\$ 469,700</u>	

* Vanilla	\$53 x 10,200	540,600
Chocolate	\$53 x 12,500	662,500
Caramel	\$50 x 12,900	645,000
Raspberry	\$50 x 13,600	680,000

4. The preferable pricing method for Kolobok is target costing as it is projected to significantly increase the return on sales from 7% to 18.5% ( $\$469,700 \div \$2,528,100$ ) while maintaining the existing sales level. Target costing will also motivate management to improve internal processes to reduce costs to further improve profitability, particularly for any product where the proposed target price is lower than the previous price. This method will also force Kolobok to be continually aware of the actions of its competitors and trends in the marketplace in order to make adjustments when needed.

### **Answer: Question 2.23 - Pursuit of Profit**

1. The advantages of using the DuPont approach includes the following:  
It breaks down the overall rate of return into smaller pieces for analysis,  
It identifies constraints faced by the firm,  
It shows how separate policy decisions interact.
2.  $ROE = NI / Sales \times Sales / Avg. Assets \times Avg. Assets / Avg. Equity$   
 $ROE \text{ Firm A} = 17/120 \times 120/273 \times 273/73 = 23\%$   
 $ROE \text{ Firm B} = 19/74 \times 74/168 \times 168/84 = 23\%$
3. a. Debt to Equity Ratio Firm A =  $200/73 = 2.73$   
Debt to Equity Ratio Firm B =  $84/84 = 1$   
b. Firm “A” uses a significant higher level of debt – more than twice as much as Firm “B”. This higher level of financial leverage increases the financial risk to equity holders of Firm B.
4. It may be appropriate for firms in mature industries and markets with little variance in period to period income, to employ higher levels of financial leverage. It would be more risky for firms that experience significant variance in income to employ leverage as the probability that income may be insufficient to service the debt burden becomes greater. Higher financial leverage is more appropriate for high-growth firms.
5. Since the “asset turnover” ratios are similar for both firms, and Firm “A” uses much more financial leverage than Firm “B”, it follows that Firm “B” must have a much higher “profit margin” than Firm “A”.  
Profit Margin Firm A =  $17/120 = 14\%$   
Profit Margin Firm B =  $19/74 = 26\%$
6. Limitations to ratio analysis include the following:  
Differences in accounting standards, such as IFRS/GAAP, LIFO/FIFO;  
Different currencies, or business environment;  
Different business sectors, firm organization.

### **Answer: Question 2.24 - Edmonds**

1. a. Capital budgeting is the process of making long-run planning decisions for investments in projects. Edmonds has already identified the project, obtained information and prepared predictions. Edmonds should consider alternative projects for improving the distribution of products. With more than one project, Edmonds could compare the alternatives.

To evaluate the current project, Edmonds should identify all the relevant cash inflows and outflows. Cash flows should be after-tax cash flows. Since the timing of cash flows varies over the ten year life of this project, discounted cash flow analysis should be used. Discounted cash flow methods measure all expected future cash inflows and outflows of a project discounted back to the present point in time.

1. b. Edmonds should continually monitor the performance of the project by performing post-audits. This long-term project includes many estimates (such as customer demand, estimated operating costs, etc). Actual cash flows should be compared to estimates to check the accuracy of the forecasts. A post audit will identify problems that need fixing and serve as a control for improving the capital budgeting process for future projects.
2. Qualitative factors in capital budgeting can include:
  - Identifying the project's impact on customers. In this project, Edmonds should consider if the new facility will maintain customer satisfaction in regards to the shipping and delivery time.
  - Identifying the project's impact on employees. Does Edmonds have adequate access to human capital in this geographical area to staff the new distribution area? What training will be necessary for employees?
  - Managing employees under project evaluation. This project proposal is based on significant estimates from several different areas of the company (supply chain, marketing, accounting and finance). How will Edmonds handle the post-audits and manage employees who contributed to the project's initial research?Other factors could be acceptable solutions.

3. Initial cash outflow is \$25,000,000 (same for pretax and after-tax)

Annual cash flows (years 1-10)

Increase in contribution margin $\$55 \times 500,000 =$	\$27,500,000
Increase in annual costs	<u>1,000,000</u>
Net increase in annual operating cash flows (pretax)	\$26,500,000
Net increase in annual cash flows after tax (x 60%)	\$15,900,000

Depreciation tax shield: The depreciation on the new building will generate a tax savings (cash inflow) in years 1-10.

$\$25,000,000 / 10 \text{ years} = \$2,500,000$  tax deduction each year x 40% tax rate = \$1,000,000 annual tax savings

4.

- a. Define Net Present Value (NPV) - The difference between the present value of all cash inflows from a project or investment and the present value of all cash outflows required to obtain the investment, or to undertake the project at a given discount rate.
- b. Define Internal Rate of Return (IRR) - The discount rate that equates the net present value of a stream of cash outflows and inflows to zero.
- c. Identify one assumption of NPV and one assumption of IRR – IRR method assumes that cash flows can be reinvested at the IRR rate. NPV depends solely on the forecasted cash flows from the project and the opportunity cost of capital; the use of the weighted average cost of capital assumes that the risk of the new project is the same as the riskiness of the rest of the company; another assumption of the NPV is that a dollar today is better than a dollar tomorrow.
- d. Discuss the decision criteria used in NPV and IRR to determine acceptable projects. If NPV is greater than zero; then the decision is to accept the project; and if IRR is greater than the hurdle rate (cost of capital) then the decision is to accept the project. Both of these will add value to the company.

5. The biggest advantage of IRR is its simplicity. IRR uses one single discount rate to evaluate every investment, making calculation and comparisons easy. The use of cash flows instead of earnings is a major advantage of IRR. This makes the calculation simple, does away with the complexities involved in determining the earnings, ensures that all the transactions remain recorded and no earnings are omitted inadvertently or otherwise, and removes scope for distortions.

With the IRR method, the disadvantage is that it can give conflicting answers when compared to NPV for mutually exclusive projects. The multiple IRR problem can also be an issue - it occurs when cash flows during the project lifetime is negative (i.e. the project operates at a loss or the company needs to contribute more capital).

6.

- a. Define the Payback method - The period of time necessary to recover the cash cost of an investment from the cash inflows attributable to the investment.
- b. Identify and explain two disadvantages of the payback method -The payback method ignores the time value of money. The cash inflows from a project may be irregular, with most of the return not occurring until well into the future. A project could have an acceptable rate of return but still not meet the company's required minimum payback period. The payback model does not consider cash inflows from a project that may occur after the initial investment has been recovered. Most major capital expenditures have a long life span and continue to provide income long after the payback period. Since the payback method focuses on short-term profitability, an attractive project could be overlooked if the payback period is the only consideration

### **Answer: Question 2.25 - Vista**

1. The Dividend Growth Model postulates that a firm's cost of equity ( $k_e$ ) is based on its dividend yield plus growth and can be expressed in the following manner;

$$k_e = D_1/P_0 + g$$

where:  $D_1$  = Dividend for the coming year  
 $P_0$  = Current price of the stock  
 $g$  = expected growth rate in dividends

Since Vista is a closely held firm, its price must be estimated based on the following:

$$P_0 = \text{P/E Ratio} * \text{EPS} = 11 * \$3 = \$33$$

Next year's dividend can be estimated by multiplying the current EPS times the payout ratio and adjusting for growth (at 10%) as follows:

$$D_1 = \$3 * 0.4 * 1.1 = \$1.32$$

$$\text{This results in a cost of equity of } k_e = D_1/P_0 + g = \$1.32/33 + 0.1 = 14\%$$

2. The Capital Asset Pricing Model (CAPM) postulates that the return on a security is equal to the risk free rate plus a risk premium. The risk premium is based on the risk (volatility) of the security relative to the overall market (as measured by Beta) times the incremental return on the market above the risk free rate. The model can be expressed as follows;

$$k_e = r_f + (r_m - r_f) * \beta$$

where:  $k_e$  = cost of equity  
 $r_f$  = the risk free rate  
 $r_m$  = return on the market  
 $\beta$  = Beta value for the firm  
For Vista,  $k_e = 5\% + (15\% - 5\%) * 1.05 = 15.5\%$

3. The dividend growth model computes the cost of equity by summing the dividend yield and the estimated growth rate. This model assumes a constant rate of dividend growth. The model can therefore overestimate the cost for firms with high growth rates because such rates cannot be sustained. Also, it is difficult to forecast growth  
CAPM computes return as the risk-free rate plus a risk premium. The risk premium is based on the risk of the security in relation to the overall market. CAPM assumes a perfectly efficient capital market and that investors concur on stock performance.

4. A firm's cost of equity is impacted by a variety of factors including the following:
  - a. Overall state of the economy
  - b. Current interest rates
  - c. Risk and return levels of the overall equity market
  - d. Risk of the industry, including factors such as
    1. Cyclicalities
    2. Level of foreign competition
    3. Stage in the industry life cycle
    4. Level of technological change
    5. Growth prospects
  - e. Specific firm risk including factors such as:
    1. Customer composition
    2. Competitive advantage compared to other firms
    3. Geographical base
    4. Operating leverage
  - f. Financial leverage of the firm measured by "Debt/Equity" or "Debt/Total Capitalization"

**Answer: Question 2.26 – Atlas Express**

1. Net working capital =  $185,100 - 2,466,800 = (2,281,700)$   
 Current ratio =  $185,100 / 2,466,800 = 0.0750$   
 Quick ratio =  $(81,800 + 87,900) / 2,466,800 = 0.0688$   
 Cash ratio =  $81,800 / 2,466,800 = 0.0332$   
 Cash flow ratio =  $45,400 / 2,466,800 = 0.0184$   
 Net working capital ratio =  $(2,281,700) / 2,186,500 = (1.0435)$

Liquidity is a firm's ability to pay its current obligations as they come due and thus remain in business in the short run. Liquidity measures the ease with which assets can be converted to cash. The liquidity of Atlas Express is poor, because all the ratios are very low with the negative net working capital.

2. Assess and control operating expenses to improve profitability.  
 Review credit terms with the customers and encourage them to pay in cash.  
 Negotiate longer payment terms with the vendors and creditors whenever possible to keep the money longer.
3. a. A legal procedure for dealing with debt problems of individuals and businesses; specifically, a case filed under one of the chapters of title 11 of the United States Code (the Bankruptcy Code).
- b. Advantages: Some unsecured debts will be discharged.  
 Orderly dissolution.  
 Others.

Disadvantages:  
 Negative effect on credit and reputation.

Property loss during bankruptcy claims.  
Cost of filing bankruptcy.  
Others.

- c. Yes. Company is illiquid; has negative equity; others.  
OR  
No. Creditors apparently cooperating; Perhaps business can turn around w/out bankruptcy; others.

**Answer: Question 2.27 – Leather Manufacturer**

1. a. The degree of operating leverage measures how much influence the cost structure has on influencing the operating results. Companies with a high degree of operating leverage have more opportunity to increase profits with increases in sales but also more risk that profits will decrease with decreases in sales. As a company becomes more reliant on fixed expenses, their operating leverage will increase. Operating leverage measures how sensitive the company is to a change in sales.

b. Calculate degrees of operating leverage using formula contribution margin/operating income:

Lease equipment =  $1,550,000/350,000 = 4.4$

Continue current =  $1,000,000/350,000 = 2.86$

2. a. Lease:  $4.4 \times 5\% = 22\%$   
Current:  $2.86 \times 5\% = 14.3\%$

Alternatively, some candidates will prepare new projected income statements for the next year. While this method will consume much more of the candidate's time, it will also provide the solution to choose the leasing option and approximate increases in operating income.

New projected income statements with 5% increase sales:

<u>Lease Equipment</u>	<u>Continue Current</u>	
Sales	2,625,000	2,625,000
Variable cost of goods sold	997,500	1,575,000
Contribution margin	1,627,500	1,050,000
Fixed costs	1,200,000	650,000
New operating income	427,500	400,000
Old operating income	350,000	350,000
Increase	77,500	50,000
% Increase	22%	14.29%

b. Since leasing the equipment has a higher operating leverage, the company should choose this option. With sales expected to increase every year for the next 10 years (the leasing term), choosing the leasing method will help the company earn higher operating income.



3. Leasing the equipment is a form of off-balance sheet financing. Under an operating lease (i.e. rental type agreement), the company will not report any debt related to the lease on the balance sheet. The asset is not recorded as an asset on the balance sheet either. The rent expense is recorded as an expense on the income statement. If the company purchases the equipment, the transaction is recorded on the balance sheet – the asset is capitalized and the related debt, including any interest payable, is shown on the balance sheet. The asset is depreciated with depreciation expense recorded on the income statement. The interest expense for the debt is also reported on the income statement.
4.
  - a.  $\$6,000,000/500,000 = 12$  years.
  - b. not consider time value  
not consider cash flows after payback date

## **CMA EXAM**

### **RATIO DEFINITIONS**

#### **Abbreviations**

EBIT = Earnings before interest and taxes

EBITDA = Earnings before interest, taxes, depreciation and amortization

EBT = Earnings before taxes

EPS = Earnings per share

ROA = Return on assets

ROE = Return on equity

### **Part 1 Financial Reporting, Planning, Performance, and Control**

#### **Section C Performance Management**

##### **Section C.3 Performance measures**

e\*.  $ROI = \text{Income of business unit} / \text{Assets of business unit}$

g.  $\text{Residual Income (RI)} = \text{Income of business unit} - (\text{Assets of business unit} \times \text{required rate of return})$

Note: "Income" means operating income unless otherwise noted

### **Part 2 Financial Decision Making**

#### **Section A Financial Statement Analysis**

##### **Section A.1 Basic Financial Statement Analysis**

- a. Common size statement = line items on income statement and statement of cash flows presented as a percent of sales; line items on balance sheet presented as a percent of total assets
- b. Common base year statements =  $(\text{new line item amount} / \text{base year line item amount}) \times 100$
- c. Annual growth rate of line items =  $(\text{new line item amount} / \text{old line item amount}) - 1$

## Section A.2 Financial Ratios

Unless otherwise indicated, end of year data is used for balance sheet items; full year data is used for income statement and statement of cash flow items.

### Liquidity

- a(1) Current ratio = current assets / current liabilities
- a(2) Quick ratio or acid test ratio = (cash + marketable securities + accounts receivable) / current liabilities
- a(3) Cash ratio = (cash + marketable securities) / current liabilities
- a(4) Cash flow ratio = operating cash flow / current liabilities
- a(5) Net working capital ratio = net working capital / total assets

### Leverage

- f(1) Degree of financial leverage = % change in net income / % change in EBIT, or = EBIT / EBT
- f(2) Degree of operating leverage = % change in EBIT / % change in sales, or = contribution margin / EBIT
- h. Financial leverage ratio = assets / equity
- i(1) Debt to equity ratio = total debt / equity
- i(2) Long-term debt to equity ratio = (total debt – current liabilities) / equity
- i(3) Debt to total assets ratio = total debt / total assets
- j(1) Fixed charge coverage = earnings before fixed charges and taxes / fixed charges fixed charges include interest, required principal repayment, and leases
- j(2) Interest coverage (times interest earned) = EBIT / interest expense
- j(3) Cash flow to fixed charges = (cash from operations + fixed charges + tax payments) / fixed charges. Note: cash from operations is after-tax.

### Activity

- l(1) Accounts receivable turnover = credit sales / average gross accounts receivables
- l(2) Inventory turnover = cost of goods sold / average inventory
- l(3) Accounts payable turnover = credit purchases / average accounts payable
- m(1) Days sales in receivables = average accounts receivable / (credit sales / 365), or = 365 / accounts receivable turnover
- m(2) Days sales in inventory = average inventory / (cost of sales / 365), or = 365 / inventory turnover
- m(3) Days purchases in payables = average payables / (purchase / 365), or = 365 / payables turnover

n(1) Operating cycle = days sales in receivables + days sales in inventory

n(2) Cash cycle = Operating cycle – days purchases in payables

o(1) Total asset turnover = sales / average total assets

o(2) Fixed asset turnover = sales / average net plant, property and equipment

## Profitability

p(1) Gross profit margin percentage = gross profit / sales

p(2) Operating profit margin percentage = operating income / sales

p(3) Net profit margin percentage = net income / sales

p(4) EBITDA margin = EBITDA / sales

q(1) ROA = net income / average total assets

q(2) ROE = net income / average equity

## Market

r(1) Market-to-book ratio = current stock price / book value per share

r(2) Price earnings ratio = market price per share / EPS

r(3) Price to EBITDA ratio = market price per share / EBITDA per share

s. Book value per share = (total stockholders' equity – preferred equity) /  
number of common shares outstanding

u(1) Basic EPS = (net income – preferred dividends) / weighted average  
common shares outstanding  
(Number of shares outstanding is weighted by the number of months shares  
are outstanding)

u(2) Diluted EPS = (net income – preferred dividends) / diluted weighted  
average common shares outstanding  
(Diluted EPS adjusts common shares by adding shares that may be issued  
for convertible securities and options)

v(1) Earnings yield = EPS / current market price per common share

v(2) Dividend yield = annual dividends per share / market price per share

v(3) Dividend payout ratio = common dividend / earnings available to common  
shareholders

v(4) Shareholder return = (ending stock price – beginning stock price + annual  
dividends per share) / beginning stock price

### **Section A.3 Profitability Analysis**

- a(1)  $\text{ROA} = \text{Net profit margin} \times \text{total asset turnover}; (\text{net income} / \text{sales}) \times (\text{sales} / \text{average total assets}) = \text{net income} / \text{average total assets}$
- b(2)  $\text{ROE} = \text{ROA} \times \text{financial leverage}; (\text{net income} / \text{average total assets}) \times (\text{average total assets} / \text{average equity}) = \text{net income} / \text{average equity}$
- g(1)  $\text{Operating profit margin percentage} = \text{operating income} / \text{sales}$
- g(2)  $\text{Net profit margin percentage} = \text{net income} / \text{sales}$
- j.  $\text{Sustainable growth rate} = (1 - \text{dividend payout ratio}) \times \text{ROE}$

### **Section B Corporate Finance**

#### **Section B.4 Working capital management**

- b.  $\text{Net working capital} = \text{current assets} - \text{current liabilities}$

### **Section C Decision Analysis**

#### **Section C.1 Cost/volume/profit analysis**

- f(1)  $\text{Breakeven point in units} = \text{fixed costs} / \text{unit contribution margin}$
- f(2)  $\text{Breakeven point in dollars} = \text{fixed costs} / (\text{unit contribution margin} / \text{selling price})$
- i(1)  $\text{Margin of safety} = \text{planned sales} - \text{breakeven sales}$
- i(2)  $\text{Margin of safety ratio} = \text{margin of safety} / \text{planned sales}$

#### **Section C.3 Pricing**

- n. Elasticity is calculated using the midpoint formula. For price elasticity of demand  $E = [\text{change in quantity} / (\text{average of quantities})] / [\text{change in price} / (\text{average of prices})]$

# Glossary of Term Used in the CMA Examination

TERM	DEFINITION
Abnormal Spoilage	Unacceptable units that are not expected to occur under an efficient production process.
Absorbed Overhead	That portion of factory indirect cost that has been allocated to a specific product, or saleable service. (Also called Applied Overhead.)
Absorption Costing	A costing system that assigns to inventory all types of manufacturing costs, including direct, indirect, fixed and variable. (Also called Full Absorption Costing.)
Accounting Cycle	The steps an accountant follows to analyze and record business transactions, prepare the financial statements, and prepare for the next accounting period.
Accelerated Depreciation	A pattern of depreciation in which the amount of depreciation computed in the early years is greater than the amounts computed in the later years.
Accounting	The process of identifying, classifying, measuring, recording and communicating in monetary terms transactions and events of an economic entity that are of a financial character.
Accounting Profit	Revenue less all expenses included in the entity's income statement.
Accounting Standards	Principles and procedures to be followed by accountants as formulated by an authoritative body. (Also called Accounting Principles.)
Accounting System	Methods, procedures, and standards followed in accumulating, classifying, recording and reporting business events and transactions.
Accounts Payable	Monies that are due to a vendor (supplier) for merchandise or services rendered.
Accounts Payable Turnover	A financial ratio used to measure the rate at which an entity pays off its suppliers.
Accounts Receivable	Monies due to an entity from customers who have bought merchandise or received services on account.
Accounts Receivable Turnover	A financial ratio used to measure asset utilization and a company's ability to collect cash from credit sales to its customers.
Accrual Accounting	The method of recognizing and recording (a) revenues when earned, and (b) expenses when incurred, both irrespective of the time when cash is received or paid.

TERM	DEFINITION
Accrued	The accumulation of income that is due but has not been received or a cost that is incurred but has not been paid by an entity during the accounting period.
Accumulated Depreciation	The amount of depreciation expense related to a fixed asset that has been recognized as an expense from the date of acquisition of that asset.
Acid-Test Ratio	A ratio that measures an entity's ability to pay off short-term obligations using the most liquid current assets (excluding inventory). (Also called Quick Ratio.)
Acquisition Cost	The value of cash or other resources given up in exchange for goods or services. It includes all costs necessary to get the asset ready for its intended use. (Also called Historical Cost or Original Cost.)
Activity Driver (Cost Driver )	A factor used to assign cost from an activity to a cost object. A measure of the frequency and intensity of use of an activity by a cost object.
Activity-Based Budgeting	An approach to budgeting that involves quantifying activities and processes and forecasting their costs in order to achieve strategic goals and improve performance.
Activity-Based Costing (ABC)	A costing system that (a) identifies the relationship between the incurrence of cost and activities, (b) determines the underlying "driver" of the activities, (c) establishes cost pools related to individual "drivers," (d) develops costing rates, and (e) applies cost to product on the basis of resources consumed (drivers).
Activity-Based Management	Management and decision making method using activity based costing information in an effort to improve customer satisfaction and profits by enhancing activities that add value and reducing activities that do not add value to the customer.
Actual Cost	Acquisition cost, historical cost, or original cost.
Additional Paid-in Capital	The amount received by a company from its shareholders for purchase of shares of stock above the par or stated value of the stock.
Administrative Expense	Costs incurred for the general operation of an enterprise as a whole, as contrasted with costs related to a more specific function such as manufacturing or selling. (Also called General and Administrative Expense.)
Aging Schedule	A listing of the amounts owed to a company by the length of time outstanding.
Allocate	Identification of costs with cost objectives; apportioning or distributing costs to products, processes, jobs, or departments.
Allocation Base	The basis used to assign indirect costs to cost objects, such as labor or machine hours.

TERM	DEFINITION
Allowance for Uncollectible Accounts	A contra account to Accounts Receivable established to record the estimated percentage of Accounts Receivable that will not be collected.
Amortization	The accounting process of allocating costs to the time periods during which such costs are consumed.
Annual Report	A report prepared by entities after the close of each reporting year that includes financial statements and disclosure, an audit report, information from management, and other pertinent information concerning the entity's financial condition and operating performance.
Annuity	A series of payments of an equal amount at fixed intervals for a specified number of periods.
Application Controls	Controls, such as input controls, adopted to safeguard specific data processing activity, such as payroll. Their purpose is to provide reasonable assurance that data is properly processed, recorded, and reported.
Appraisal Costs	Costs incurred to determine whether products and services are conforming to customer and/or manufacturing requirements. Examples include inspection and testing costs.
Appreciation	The situation where there is an increase in economic worth caused by rising market prices.
Arbitrage Pricing Theory (APT)	A framework for analyzing the relationship between risks and rates of return on securities, especially common stocks. It asserts that the risk elements that influence returns on securities include (1) inflation, (2) industrial production, (3) risk premiums, and (4) the slope of the term structure of interest rates.
Asset	1. Probable future economic benefits obtained by an entity as a result of past transactions. 2. Any owned physical object or right having economic value to its owners, expressed for accounting purposes in terms of its cost or other value (such as current replacement cost).
Asset Coverage	A measure of the extent to which a company is able to cover its debt obligations after all liabilities have been satisfied.
Asset Turnover	A financial ratio that assesses how efficiently an entity is utilizing its assets; it relates sales to assets. (Also called Total Asset Turnover.)
Audit	The systematic examination by analyses, confirmation, and tests of accounting records to confirm with reasonable assurance that the records adequately reflect economic status and operations.
Audit Committee	Members of the board of directors (in the case of corporations), trustees, legislative bodies, or similar governance boards, with responsibilities for oversight and direction of the internal auditing function.



TERM	DEFINITION
Audit Report	A written document that presents the scope and results of the audit.
Authoritative (top-down) Budgeting	A budgeting process where all budgets for the organization are prepared by top management, including budgets for lower-level operations.
Authority	The formal and legitimate right of a manager to make decisions, issue orders, and allocate resources to achieve organizationally desired outcomes.
Authorized Shares	Maximum number of shares of stock a firm is authorized to offer to the public.
Available-for-sale Securities	Under GAAP, investments the company may hold or sell.
Average Days in Inventory	The average number of days an item is held in inventory.
Average Collection Period	A measure of the average number of days it takes to collect receivables (credit sales). (Also called Days Sales Outstanding and Days Sales in Receivables.)
Average Fixed Cost	Total fixed costs divided by the number of units produced. (Fixed cost per unit)
Average Total Cost	Total manufacturing costs divided by the number of units produced. Sometimes called per unit cost.
Average Variable Cost	Total variable cost divided by the number of units produced.
Backflush Costing	A product costing approach used in a Just-in-Time operating environment in which some or all of the costing is delayed until the goods are finished. Standard costs are then pulled backward through the system to assign costs to products.
Backup Controls	Controls, such as file duplicating, in an Information Technology (IT) environment to insure that data is not lost.
Bad Debts	Accounts or notes receivable that management determines to be uncollectible after reasonable efforts to collect them have not been successful.
Bad Debts Expense	The expense to record uncollectible accounts receivable.
Balance Sheet	A financial statement that summarizes a company's assets, liabilities and shareholders' equity at a particular point in time.
Balanced Scorecard	An approach using multiple measures to evaluate performance, including financial measures, and the non-financial measures of customers, internal business processes, and learning and growth.
Banker's Acceptances	Financial instrument of an entity stating that payment is guaranteed by a bank, commonly used in foreign trade.

TERM	DEFINITION
Bankruptcy	A condition in which a court has granted a company legal protection from creditors because it cannot meet its obligations as they come due.
Batch Costing	The costs of activities related to a group of units of products or services rather than to each individual unit of product or service.
BCG Growth-Share Matrix	A method of analyzing a portfolio of products or businesses. Developed by the Boston Consulting Group, it classifies businesses as Stars, Cash Cows, Dogs, or Question Marks.
Benchmarking	A process of measuring an entity's performance, products, and services against standards based on best levels of performance achievable or achieved by other entities.
Best Practice	A technique, method, process, or activity that is more effective at delivering a particular outcome than any other technique, method, process, or activity.
Beta	A measurement of the movement of the price of a particular stock compared with the movement of the market as a whole during the same period. If a stock has a beta value less than 1, it is regarded as less risky than the overall market. If a stock has a beta value greater than 1, it is regarded as more risky than the market
Binomial Option-Valuation Models	Option pricing models in which the underlying asset can take on only two possible, discrete values in the next time period for each value that it can take on in the preceding time period.
Black-Scholes Option-Valuation Model	A model for pricing options in which the value of an option depends on (1) the value of the underlying asset, (2) the time to expiration of the option, (3) the exercise price, (4) the volatility of the underlying asset, and (5) the risk-free rate or time value of money.
Board of Directors	A group of individuals elected by a corporation's shareholders to oversee the management of the corporation. The members of a Board of Directors meet periodically and assume legal responsibility for corporate activities.
Bond	A long-term debt instrument signifying the promise of the issuer to pay the face amount at the maturity date. Periodic interest payments are often required.
Bonds Payable	A long-term liability account used to record the amount of bonds that are outstanding.
Book Value	The amount at which an asset or a liability is carried on the books of account, net of any contra account. (Also called Net Book Value.)
Book Value per Share	Measures common shareholder equity on a per share basis.
Bottleneck	Operational constraints or inefficient usage of available resources creating work-in-process inventory buildup and/or idle time.

TERM	DEFINITION
Bottom-Up Approach	An approach to auditing internal controls whereby all controls are documented irrespective of risk.
Breakeven Analysis	An analysis of the relationship of cost and revenue. It determines the volume at which there is neither profit nor loss for a product or group of products. (Also called Cost/Volume/Profit Analysis.)
Breakeven Point	The volume of sales at which total revenues and total costs are equal.
Budget	A schedule of planned or expected revenues, expenses, assets, and liabilities. A budget provides guidelines for future operations and appraisal of performance. (Also called Profit Plan.)
Budget Process	The process used by an organization to prepare a plan for a future period, allocate resources, determine revenues and expenditures, and compile reports pertaining to that plan.
Budgetary Slack	Intentional underestimation of revenues and/or overestimation of expenses.
Budgeting	The process of planning flows of financial resources into, within, and from an entity during a specified future period or for a specified project.
Business	A commercial or industrial enterprise.
Business Combination	A grouping of a company with other businesses into a single accounting entity for reporting purposes (consolidated financial statements). The company and the other businesses continue to operate as separate entities.
Business Continuity Planning	The creation of a strategy to ensure that personnel and assets are protected and able to function in the event of a disaster.
Business Plan	A document prepared by a company's management, detailing the past, present, and future of the company. It forms the basis for preparing budgets for the individual company units.
Business Portfolio	A collection of products, projects, services, or brands that are offered for sale by an entity.
Business Process	A sequence of logically related and time based work activities to provide a specific output for a customer.
Business Unit	Any segment of an organization, or an entire business entity that is not divided into segments. Sometimes treated as a Profit Center.
Byproduct	An item resulting from a production process that has relatively little value compared to the company's main product.
Call Option	A contract that gives the buyer the right to buy an asset (for example a share of stock) at a specified price within a specified period of time.

TERM	DEFINITION
Capacity Constraints	Resources that limit the maximum performance possible considering the conditions of the existing physical plant, labor force, method of production, or supply of material.
Capacity Management	Management of an entity's costs of unused (excess) capacity such as production facilities, distribution channels, etc.
Capital	<ol style="list-style-type: none"> <li>1. The equity invested in an entity by its owners. Total assets less liabilities.</li> <li>2. Long-term assets (e.g., equipment)</li> </ol>
Capital Adequacy	The amount of capital relative to a company's assets. A useful measure in risk management (particularly for banks).
Capital Asset Pricing Model (CAPM)	A general framework for analyzing the relationship between risks and rates of return on securities, especially common stocks.
Capital Budget	A plan of proposed outlays for acquiring long term assets and the means of financing the acquisition.
Capital Budgeting	The evaluation and making of long-term investment decisions.
Capital Expenditure	A cost that is recorded as a long-term asset, not an expense, at the time it is incurred.
Capital Gain or Loss	The extent by which the net realized value from sales of a capital asset exceeds (or in the case of a capital loss is less than) the cost of acquisition plus additional improvements, less depreciation and/or depletion charges.
Capital Investment	Any expenditure which increases the capacity, efficiency, life span, or economy of the operation of an existing fixed asset. Outlay of money from which future cash inflows are expected for more than a year. (Also referred to as Capital Expenditure.)
Capital Lease	A lease that transfers substantially all the benefits and risks inherent in the ownership of the property to the lessee, who accounts for the lease as an acquisition of an asset and the incurrence of a liability.
Capital Stock	Ownership shares in a corporation issued to shareholders. May consist of Common Stock and Preferred Stock.
Capital Structure	The relative proportions of short-term debt, long-term debt, and owners' equity in the company.
Capitalize	To record expenditure that is expected to benefit a future period as an asset rather than treating the expenditure as an expense of the period in which it occurs.
Carrying Cost	Costs of storing and holding inventory, including the cost of capital from the time of acquisition or manufacture until the time of sale or use.

TERM	DEFINITION
Carrying Value	The amount shown on an entity's financial statements for assets, liabilities, or owner's equity, net of reductions or offsets.
Cartel	An organization of sellers coordinating supply decisions to maximize joint profits. A cartel seeks to create a monopoly in the market.
Cash	Refers to money in the form of liquid currency that a bank will accept for immediate deposit, such as coins, checks, and money orders.
Cash Budget	An estimate of the amount and timing of cash receipts and disbursements at various points over a future period, and cash on hand at the end.
Cash Cow	A division, or product, that is not growing, but is generating significant cash flow, which can be transferred to other, faster growing divisions.
Cash Cycle	The period of time during which cash is converted into inventories, and inventories are converted back into cash through the sale of goods or collection of accounts receivable. (Also called Cash Conversion Cycle or Earnings Cycle.)
Cash Discount	A reduction in the basic price, commonly used to encourage prompt payment or promote sales.
Cash Equivalents	Short-term financial instruments of high liquidity and safety which can be converted to cash on short notice
Cash Flow	The stream of cash inflows and outflows of an entity or segment of an entity.
Cash Flow at Risk	A probabilistic estimate of the sensitivity of cash flow; how budgeted cash flow might be affected by changes in certain risk factors and other variables.
Cash Flow Ratio	A liquidity measure, whereby operating cash flow is divided by current liabilities.
Cash Flow to Fixed Charges	A leverage ratio that measures the cash flow available to meet fixed charges.
Cash from Financing Activities	Under GAAP, all cash receipts and all cash disbursements from issuing debt, receiving contributions from owners, and paying dividends to owners.
Cash from Investing Activities	Under GAAP, all cash receipts and cash disbursements from transactions involving long-term assets and investments in other firms.
Cash from Operating Activities	Under GAAP, all cash receipts and cash disbursements that result from transactions involving revenues and expenses.
Cash Management	The processes an entity uses to collect, disburse, and invest its cash.
Cash Ratio	A measure of a company's liquidity that relates cash and marketable securities to current liabilities.

TERM	DEFINITION
Centralization	An organizational structure in which senior management maintains significant direction, authority, and control over all operations and policies.
Change in the Quantity Demanded	A change in the quantity that buyers are willing to purchase at different price levels due only to a change in price. Often referred to as a movement along the demand curve.
Change in the Quantity Supplied	A change in the quantity sellers are willing to supply due only to a change in price. Often referred to as a movement along the supply curve.
Chart of Accounts	A list of all of the accounts in a firm's accounting records.
Code of Conduct	A set of rules outlining acceptable ethical behavior for employees within an organization.
Coefficient of Variation	A statistical measure of relative dispersion or relative risk. It is computed by dividing the standard deviation by the expected value.
Collateral	An asset pledged as a guarantee to a lender until a loan is repaid. If the borrower defaults, the lender has a right to sell the collateral asset.
Commercial Bank	An institution that accepts deposits, offers checking accounts, makes loans, and offers a variety of other related services.
Commercial Paper	A short-term unsecured loan of a corporation having maturity up to 270 days. It is typically issued on a discount (from face value) basis.
Commitment Fee	A fee paid to a financial institution by an entity to secure a line of credit and maintain the unused portion thereof.
Committee of Sponsoring Organizations (COSO)	A voluntary private-sector organization, established in the U.S., dedicated to providing guidance on organizational governance, business ethics, internal control, enterprise risk management, fraud, and financial reporting.
Common Base Year Statements	Financial Statements showing the percentage change over a base year. (Also called Horizontal Analysis.)
Common Cost	A cost of operating a facility that is shared by two or more users.
Common-Size Financial Statements	Financial statements used for comparison between firms. A common size Income Statement shows all amounts as a percent of revenue. A common size Balance Sheet shows all values as a percent of total assets.
Common Stock	An ownership share in a company, having voting and dividend rights.
Company Risk	The risk due to the unique circumstances of a specific enterprise, as opposed to the overall market. (Also called Unsystematic Risk.)
Comparability	The quality of information that enables users to identify similarities in and differences between two sets of economic phenomena.
Compensating Balance	An amount required to be kept on deposit at a bank.

TERM	DEFINITION
Compensation	Employee or management wages and other financial benefits earned from labor.
Competence	An ethical standard in IMA's Statement of Ethical Professional Practice that requires members to maintain an appropriate level of professional expertise and perform duties in accordance with relevant laws and standards.
Competition-Based Pricing	A pricing strategy wherein the price of a product is determined primarily by the price being charged by one or more competitors.
Competitive Analysis	Comparison of the competitive advantage of the planning company and its identified competitors.
Completed-Contract Method	An accounting method that defers recognition of revenues until the completion of a contract, but recognizes anticipated losses immediately.
Compliance Audit	A type of internal audit that reviews an organization's adherence to laws, rules, policies, and procedures.
Compliance Risk	Risk to earnings or capital arising from violations of laws, rules, regulations, policies, procedures, and/or ethical standards.
Compound Interest	Interest resulting from the periodic addition of simple interest to principal, establishing the new base as the principal for computation of interest for the next period.
Comprehensive Income	All changes in equity during a period except those resulting from investments by owners and distributions to owners.
Concentration Banking	A procedure utilized to manage cash wherein an entity utilizes a large bank (the Concentration Bank) to gather all the cash from smaller local (depository) banks where customers make payments.
Confidentiality	An ethical standard in IMA's Statement of Ethical Professional Practice that requires members to keep employer information confidential and to not use confidential information for personal advantage.
Conservatism	1. An accounting concept that states that revenues are recognized only when they are reasonably certain, but expenses are recognized when they are probable. 2. A prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered.
Consistency	Conformity from period to period with unchanging policies and procedures.
Consolidated Financial Statements	Financial Statements showing financial condition or operating results of two or more associated enterprises as they would appear if they were one entity.

TERM	DEFINITION
Constant Gross Profit Method	A method of allocating joint costs where costs are allocated so that the overall gross-margin percentage is identical for each individual product. (Also called Gross Margin Method.)
Constraint	An activity, resource, or policy that limits or bounds the attainment of an objective.
Contingency Planning	Planning for the response to situations that may occur such as emergencies or setbacks
Continuous Budget	A moving projection of financial operations for a series of weeks, months, or quarters immediately ahead. At the end of each period, the portion of the projection then lapsed is removed and a new projection for a period of similar length is added to the series. (Also called Rolling Budget.)
Continuous Improvement	A management approach to productivity improvement, where planned improvements occur in small incremental amounts by refinement of all components of a process. (Also called Kaizen.)
Contributed Capital	Equity resulting from the contributions of owners, also known as paid-in capital.
Contribution Margin	The excess of sales revenues over variable costs. (Also called Marginal Contribution or Marginal Income.)
Contribution Pricing	A method of establishing the price of the product based on variable costs and usually a profit margin.
Control Risk	A measure of the auditor's assessment of the likelihood that misstatements exceeding a tolerable level will not be prevented or detected by the client's internal control system.
Controllable Cost	A cost that can be influenced by the actions of the responsible manager.
Controller	The individual within an entity who is responsible for the accounting function. (Also called Comptroller.)
Controls	Measures put in place to monitor activities and ensure they are functioning as designed.
Conversion Cost	The sum of all manufacturing costs except direct material.
Convertible	Securities (bonds or preferred stock) issued by companies which can be converted into common shares at a given price at a future date.
Corporate Governance	The set of rules, processes, policies and/or laws by which an organization is directed, operated and controlled.
Correlation	The extent or degree of statistical association among two or more variables.



TERM	DEFINITION
Cost (noun)	1. In management accounting, a measurement in monetary terms, of the amount of resources used for some purpose. 2. In financial accounting, the sacrifice measured by the price paid or required to be paid, to acquire goods or services.
Cost (verb)	To ascertain the cost of something.
Cost Allocation System	A method by which costs are allocated to cost objects (Job order costing, Process costing, Activity-based costing, and Life-cycle costing).
Cost Behavior	The change or lack of change in the amount of a cost item associated with changes in the level of activity.
Cost Benefit Analysis	A tool for planning and reporting that involves the identification and measurement of all costs and benefits attributed to an activity.
Cost Center	A grouping of operating costs having some common characteristics for measuring performance and assigning responsibility. A Responsibility Center where the manager is responsible for costs only.
Cost Driver	A variable causally affecting costs over a time period.
Cost Leadership	The ability of a company to compete by producing at lower cost than competitors.
Cost Management	Actions undertaken by managers to satisfy customers while continuously controlling and reducing costs.
Cost Objects	A function, organizational subdivision, contract, or other work unit for which cost data are desired and for which provision is made to accumulate and measure the cost of processes, products, jobs, capitalized projects, etc.
Cost of Capital	A measure of the cost of using capital. A weighted average of the interest cost of debt capital and the implicit cost of equity capital. It is the minimum rate of return that must be earned on new investments that will not dilute the interests of the shareholders.
Cost of Goods Sold	The inventory costs of the goods sold during a specific time period; the difference between the costs of goods available for sale during a specific period of time and the cost of goods on hand at the end of the period. Inventory costs include all costs necessary to get the product ready for sale.
Cost of Quality	Costs incurred to detect, prevent, or rectify poor quality production.
Cost of Sales	The cost of products or services whose sales are reported as revenue. (Also called Cost of Goods Sold.)
Cost Pools	The collection of cost elements that have a common cause and that can be assigned to other cost objects according to a common basis of allocation.
Cost System	The system an entity utilizes to collect and assign costs to intermediate and final cost objects.

TERM	DEFINITION
Cost/Volume/Profit Analysis (CVP)	An analysis of the relationship of cost and revenue emphasizing both the volume at which there is zero profit and the influence of fixed and variable factors on the profit expectations at various levels of operation. (Also called Breakeven Analysis.)
Cost-Based Pricing	The practice of establishing the selling price of a good or service based primarily on the cost to produce it.
Costing	The accumulation and assignment of costs to cost objects.
Cost-Plus Pricing	A pricing practice in which the selling price is determined by adding a percentage or monetary amount to the cost of a product.
Countertrade	The trading of goods for other goods. (Also called Barter.)
Coupon Rate	The annual rate of interest stated on a debt instrument.
Credibility	An ethical standard in IMA's Statement of Ethical Professional Practice that requires members to communicate information fairly and objectively, disclose all relevant information, and to disclose delays or deficiencies in information.
Credit	A contractual agreement in which a borrower receives something of value now and agrees to repay the lender at a later date.
Credit Risk	An investor's risk of loss arising from a borrower who defaults; i.e., does not make payments as promised.
Critical Success Factors	The important things an entity must do to be successful.
Cumulative Average-Time Learning Model	A learning curve model in which the cumulative average time per unit declines by a constant percentage each time the cumulative quantity of units produced is doubled.
Cumulative Preferred Stock	Stock whose holders must receive dividends in arrears before a company can pay any current dividends to other shareholders.
Current Assets	Cash and other assets that are expected to be sold, consumed or converted into cash during the normal operating cycle of a business.
Current Cost	The amount of cash needed if the same asset, an identical asset, or an asset with equivalent productive capacity were acquired currently.
Current Liability	A liability required or expected to be discharged (fulfilled) by using current assets within one year or the operating cycle, whichever is longer.
Current Ratio	A financial ratio used to measure short-term solvency. (Also called Liquidity Ratio.)
Customer Satisfaction	A measure of the extent to which customers are satisfied with the products and related services they received from a supplier.

TERM	DEFINITION
Cycle Time	The total elapsed time to move a unit of work from the beginning to the end of a physical process, as defined by the producer and the customer.
Cyclical	A type of trend where something (e.g., sales) varies in a regular pattern; a repeated sequence.
Database	1. A set of data that is sufficient for a given purpose or for a given data processing system. 2. A collection of data fundamental to a system or to an enterprise.
Data Communications	Transfer of data among functional units through data transmission protocols.
Data Encryption	In computer security, the process of transforming data into an unintelligible form in such a way that the original data either cannot be obtained or can be obtained only by using a decryption process.
Data Warehouse	A central repository for all or significant parts of the data that an organization's business systems collect.
Database Management	The management of an organization's data.
Days Purchases in Payables	A financial ratio measuring the portion of accounts payable that is current.
Days Sales in Inventory	A measure of the age or adequacy of inventory.
Days Sales in Receivables	A measure of the average number of days a credit sale is outstanding. (Also called Days Sales Outstanding and Average Collection Period.)
Debt Ratio	A financial ratio used to measure the extent to which an entity utilizes debt. (Also called Debt to Total Assets Ratio.)
Debt-to-Equity Ratio	A measure of leverage, represented by total debt divided by equity.
Debt to Total Assets Ratio	A financial ratio used to measure the extent to which an entity utilizes debt, expressed as total debt divided by total assets. (Also called Debt Ratio.)
Debt Security	A promise in writing to repay a debt. For example a bond, bill or note.
Decentralization	An organizational structure in which senior management maintains minimal control over individual operations and policies.
Decision Tree	A diagram of possible alternatives and their expected consequences used to formulate possible courses of actions in order to make decisions.
Declining-Balance Method	An accelerated depreciation method in which an asset's net book value is multiplied by a constant depreciation rate resulting in higher depreciation charges in the early years of an asset's life.
Default Risk	The risk that a debtor may not be able to meet the terms of a loan.

TERM	DEFINITION
Deferred	When an asset or liability is not realized as an expense or income until a future date.
Deferred Expenses	Expenditures not recognized in the period in which they were made. They are carried forward as assets that will become expenses in future periods. (Also called Deferred Charges.)
Deferred Income Taxes	In general, the difference between the income tax expense recorded for financial accounting purposes and the amount of income tax paid.
Deferred Revenue	Generally, revenues received or recorded but not yet earned. (Also called Deferred Credit.)
Deferred Tax Asset	Under GAAP, the deferred tax benefits attributable to deductible temporary differences.
Deferred Tax Liability	Under GAAP, the deferred tax effect attributable to taxable temporary differences, which represent the increase in taxable payable in future years.
Degree of Financial Leverage	A financial ratio represented as the % change in net income divided by the % change in Earnings Before Interest and Taxes.
Degree of Operating Leverage	A financial ratio represented as the % change in Earnings Before Interest and Taxes divided by the % change in sales.
Delegation of Authority	The assignment of authority and responsibility to another person to carry out specific activities.
Demand	The quantity of a commodity or service wanted at a specified price and time. Along with supply and other factors, a key determinant of price.
Department	A division or distinct section of an organization.
Departmental Overhead	The total overhead costs incurred by a department.
Depletion	The process of allocating the cost of wasting assets (natural resources) to expense over the periods benefiting from the cost.
Depreciation	The process of allocating the cost of tangible assets to operations over periods benefited (generally the expected life of the asset).
Derivatives	A collective term for financial instruments whose prices are based on the price of another (underlying) investment (e.g., futures, options, warrants, and convertible securities).
Detection Risk	The risk that errors not detected or prevented by the control structure will also not be detected by the auditor.
Differential Cost	The difference in total cost between two alternatives. (Also called Incremental Cost).
Differentiation	The ability of a company to compete by producing a unique product.

TERM	DEFINITION
Diluted Earnings per Share	Earnings (net income) per share where “share” includes common stock, preferred stock, unexercised stock options, unexercised warrants, and some convertible debt.
Direct Cost	A cost that is specifically identified with a single cost object.
Direct Costing	Method of inventory costing that includes all direct manufacturing costs and variable indirect manufacturing costs as inventory (fixed indirect manufacturing costs are excluded). (Also called Variable Costing.)
Direct Foreign Investment	Overseas investment by multinational enterprises.
Direct Labor Cost	The compensation of all labor that can be identified with a cost object.
Direct Materials Cost	The acquisition cost of all materials that can be identified as part of the cost object.
Direct Method	<ol style="list-style-type: none"> <li>1. Method of allocating service department costs that ignores any services rendered by one service department to another, allocating each service department’s costs directly to the production departments. (Also called Direct Allocation Method.)</li> <li>2. A method of preparing The Statement of Cash Flows where net cash flow from operating activities are reported as major classes of operating cash receipts and cash disbursements (as opposed to indirect method.)</li> </ol>
Direct Write-off Method	A method of accounting for bad debts in which they are expensed in the period in which they are identified as uncollectible.
Disaster Recovery	A procedure for storing an installation's essential data in a secure location, and for recovering that data in the event of a catastrophic problem.
Disbursement	The payment of cash.
Disbursement Float	The value of checks that an entity wrote that have not yet cleared the banking system and not yet deducted from the entity’s bank account. (Also called Payment Float.)
Disclosure	An explanation or exhibit attached to a financial statement, or report.
Discount	<ol style="list-style-type: none"> <li>1. In the case of debt securities, the difference between the price paid by an investor and the face value.</li> <li>2. In the case of products for sale, the difference between the price paid by a customer and the full price of the item.</li> </ol>
Discount Factor	The present value of one unit of currency that is expected to be received in future years.
Discount on Bonds Payable	The difference between the face value of the bonds and its selling price when the selling price is less than the face value.

TERM	DEFINITION
Discount Rate	The interest rate used to convert future cash flows to their present value.
Discounted Cash Flow	A method of evaluating future net cash flows by discounting them to their present value. The two methods most commonly used are Internal Rate of Return (IRR) and Net Present Value (NPV) methods.
Discounted Payback	The amount of time expected to elapse before the discounted present value of cash inflows equals the discounted present value of the cash outflows.
Discretionary Cost	A cost whose amount within a time period is governed by a management decision to incur the cost. (Also called Managed Cost or Programmed Cost.)
Diseconomies of Scale	Increases in average total costs occurring from an increase in the scale of production in the long run.
Distribution	The mechanism by which products or services are delivered to the customer.
Distribution Channels	A chain of intermediaries, each passing the product down the chain to the next organization, until it finally reaches the consumer or end-user (e.g., retailer, wholesaler, agent).
Diversification	A technique used by an investor to reduce risk by distributing investment funds among a variety of asset classes; a strategy that implements expansion into new product lines, new customers, new geographic locations, new industries.
Divestiture	The sale of one or more of a company's subsidiaries or divisions.
Dividend	The distribution of part of a company's earnings to shareholders.
Dividend Declaration Date	The date on which the board of directors declares a dividend.
Dividend Discount Model	A method used to place a value on a share of stock based on the net present value of the dividends that are expected to be received in the future. Expressed as $D / (k - g)$ , where $D$ = the expected dividend per share, $k$ = the expected rate of return, and $g$ is the expected growth rate. (2 forms: constant growth model and two-stage model.)
Dividends in Arrears	Dividends owed to holders of cumulative preferred stock but not yet paid.
Dividend Payout	The amount of the dividend paid on a share of stock in a year.
Dividend Payout Ratio	The annual dividend per share of stock as a proportion of Earnings per Share.
Dividend Yield	The annual dividend income per share received from a company as a proportion of the current market price per share.
Downstream Costs	Costs incurred after a product is manufactured, including marketing, distribution, and customer service.

TERM	DEFINITION
Draft	An instrument signed by a one person to another person requesting payment at a future time to a third party.
Drum-Buffer-Rope System	The Theory of Constraints production application, where drum refers to the constraint, buffer refers to the material release duration, and rope refers to the release timing. The aim is to protect the constraint in the system against process dependency and variation, maximizing the systems' overall effectiveness.
Dual Allocation Method	A method of allocating service department costs where cost are classified into two cost pools – a variable cost cost-pool and a fixed-cost cost-pool. Each of these pools uses a different cost-allocation base.
Dual-Rate Transfer Pricing	A method where the transfer price is set at different levels for the supplying and receiving divisions of an organization.
Duration	A measure of the volatility of fixed income securities or of a portfolio of fixed income securities to changes in interest rates (i.e., the weighted average number of years until cash flows are received).
Earnings	The excess of revenue over expenses for an accounting period. Sometimes used synonymously with net earnings, net income, or income.
Earnings at Risk	A probabilistic estimate of the sensitivity of earnings; how forecasted earnings might be affected by changes in certain risk factors and other variables.
Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA)	A metric used to evaluate profitability; it eliminates the effects of financing and accounting decisions.
Earnings Coverage	The availability of a company's cash flows to service its debt.
Earnings Distribution	A probabilistic distribution of earnings outcome such that one can estimate the probability of obtaining a certain level of earnings. Used in risk management.
Earnings Per Share (EPS)	Net income available to common shareholders on a per share basis.
Earnings Quality	The extent that net income is a realistic portrayal of operating performance (i.e., that reported results have not been intentionally overstated or understated by management).
Earnings Yield	Earnings per share for the most recent 12 months as a proportion of the current price per share.
Earnings-Based Valuation	Techniques used to value a share of stock or entity based on earnings expected to be generated by the item or entity. Generally involves present value models.

TERM	DEFINITION
Economic Order Quantity (EOQ)	The optimal amount of an item to order when inventory is reduced to the reorder point. (Also called Optimal Lot Size.)
Economic Profit	A return to investors that exceeds the opportunity cost of financial capital.
Economies of Scale	Reduction in an entity's per unit cost associated with production processes that produce large volumes of output.
Effective Interest Rate	The internal rate of return or yield to maturity of a bond at the time of issue.
Efficiency (Usage) Variances	The difference between the actual quantity of input used and the budgeted quantity of input, multiplied by the budgeted price.
Efficient Market Hypothesis	The hypothesis that security prices always fully reflect all publicly available information concerning traded securities.
Elasticity	A measure of the degree to which a price change for an item results in a unit change in supply or a unit change in demand.
Elasticity of Demand	A measure of consumer response to a change in the price of a product or service. Calculated as the percent change in quantity demanded divided by a percent change in price. Depending on the response, the product or service is called either elastic or inelastic.
Encryption	A procedure that transforms information, using an algorithm, to make it unreadable to anyone who does not have the key to decode the message.
Enterprise Resource Planning (ERP)	ERP systems integrate (or attempt to integrate) the data and processes of an organization into a single unified system.
Enterprise Risk Management (ERM)	A process applied across the enterprise designed to 1. Identify potential events that, if they occur, could negatively impact the enterprise; and 2. Manage this risk to provide reasonable assurance to management and the Board of Directors.
Enterprise-Wide	Used to describe systems and processes in use throughout an organization.
Entity	A person, partnership, corporation, or other separate identifiable unit.
Equilibrium	In economics the state of a market for a product or service where there is a balance of supply and demand
Equity	The residual amount after deducting an entity's liabilities from its assets. The amount that shareholders own in a corporation.
Equity Carve-Out	When a parent company sells a minority (usually 20% or less) stake in a subsidiary for an IPO. (Also called partial spin-off.)
Equity Multiplier	Total assets as a proportion of common equity. (Also called Financial Leverage Ratio.)



TERM	DEFINITION
Equivalent Units	A measure of the physical quantities of inputs necessary to produce output of one fully complete unit.
Ethics Code	A list of principles and/or standards governing the conduct of individuals within an organization.
Ethics Help-Line	A resource for obtaining guidance on ethical dilemmas; generally in the form of an exclusive telephone number that connects to an ethics counselor.
Eurodollars	Deposits denominated in U.S. Dollars at financial institutions outside the United States.
Exception Reporting	Reporting that alerts management by focusing on significant deviations from planned performance.
Exchange Rate	The price of one country's currency in terms of another country's currency.
Exchange Rate Risk	The risk that the value of a cash flow will decline due to a change in exchange rates.
Exercise Price	Price at which a call option or put option may be exercised (carrying out terms of agreement). (Also called Strike Price.)
Expected Value	The weighted average of the outcomes of an action, in which the values of the possible outcomes are weighted by their probabilities.
Expenditure	Payment for goods or services received that may be made at either the time the goods or services are received or a later time.
Expense	Cost of goods and services used in the current accounting period.
Expense Recognition	The recording in the accounting system of a cost.
Expropriation Risk	The risk of a foreign government seizing the private property of a company.
External Factors	Factors beyond the control of an entity that influence overall economic conditions or the market for its product.
External Failure Costs	Costs that an entity incurs when it detects nonconforming products or services after delivering them to customers (e.g., warranty repairs and product liability).
External Financial Reporting	The reporting of financial information focused on an external audience (lenders, investors, and the general public).
Extraordinary Items	Under GAAP, events that are unusual in nature and infrequent in occurrence.
Factory Overhead	All manufacturing costs except direct materials and direct labor.

TERM	DEFINITION
Factoring	The sale of accounts receivable at a discount to a factor (usually a financial institution). The financial institution then collects the accounts from the customer.
Fair Market Value	The exchange price that would prevail for a good or service traded in an active market consisting of a large number of well-informed buyers and sellers dealing at arm's length.
Fair Value Method	A method used to value an entity's investments in marketable securities. If the carrying value of marketable securities falls below the Fair Market Value, then the value of the security should be reduced to the Fair Market Value.
Favorable Budget Variance	A variance arising when actual or current performance exceeds expected performance.
Feedback	The process of informing users of information about how actual performance compares with the expected or desired level of performance.
Financial Accounting	The accounting for assets, equities, revenues and expenses of an entity; primarily concerned with the historical reporting to external users of the financial position and operations of the entity on a regular periodic basis.
Financial Accounting Standards Board (FASB)	An independent board consisting of seven members responsible for establishing generally accepted accounting principles for the U.S.
Financial Budget	The part of the Master Budget that includes the Capital Budget, Cash Budget, Budgeted Balance Sheet, and Budgeted Statement of Cash Flows.
Financial Instrument	An instrument having monetary value (e.g., bond).
Financial Leverage	The extent to which the assets of an entity are financed with debt.
Financial Leverage Ratio	Total assets as a proportion of total common equity, which measures the extent of financial leverage.
Financial Reporting	Presentation of financial information indicating an entity's financial position, operating performance, and funds flow for an accounting period.
Financial Statement	A report containing financial information about an organization, including the Balance Sheet (or Statement of Financial Position), Income Statement, and Cash Flow Statement.
FOB (free on board) Destination	The seller pays the shipping costs. Title passes to the buyer upon receipt of the goods.
FOB (free on board) Shipping Point	The buyer pays the shipping costs. Title passes to the buyer when the goods are shipped.
Financing Expenses	Expenses incurred by an entity in order to issue debt or equity securities.

TERM	DEFINITION
Finished Goods Inventories	The part of inventory that accounts for the completed product, ready for sale or other disposition.
Firewall	A network configuration (usually both computer hardware and software) that prevents unauthorized traffic into and out of a secure network.
Firm	A business entity, such as a corporation
First-In-First-Out (FIFO)	A method of inventory valuation and cost flow assumption, where the ending inventory cost is computed from the most recent purchases and the cost of goods sold is computed from the oldest purchases, including beginning inventory.
Fiscal Year	Any accounting period of 12 successive calendar months (or 52 weeks, or 365 days), used by an entity for financial reporting.
Fixed Asset	A noncurrent, nonmonetary, tangible asset used in the normal operations of a business.
Fixed Asset Turnover	Measures an entity's ability to generate sales from fixed assets. It relates sales to net property, plant, and equipment.
Fixed Budget	A budget with fixed and unchangeable amounts of revenues and expenses. (Also called a static budget.)
Fixed Charges	Fixed financial costs such as interest payments and lease (rent) payments.
Fixed Charge Coverage Ratio	A leverage ratio, represented as earnings before fixed charges and taxes divided by fixed charges. Fixed charges include interest, required principal repayments, and leases.
Fixed Cost	A cost that does not vary with the volume of activity in the short term. (Also called Nonvariable Cost or Constant Cost.)
Fixed Exchange Rate	A monetary system in which a country's currency is set at a fixed rate relative to other currencies.
Fixed Overhead	Overhead Costs that do not vary with the level of output
Fixed Overhead Spending Variance	The difference between the fixed overhead incurred and the fixed overhead budgeted.
Flexible Budget	A budget in which the budgeted amounts may be adjusted to any activity level.
Flexible Exchange Rate	An exchange rate for a country's currency that is determined by the market forces of supply and demand. (Also called Floating Exchange Rate.)
Floating Exchange Rate	An exchange rate for a country's currency that is determined by the market forces of supply and demand. Also referred to as a Flexible Exchange Rate.

TERM	DEFINITION
Flowchart	A graphical representation of the flow of information in which symbols are used to represent operations, data, reports generated, equipment, etc.
Forecast	A projection of the expected financial position, results of operations, and cash flows based on expected conditions in the future.
Foreign Corrupt Practices Act	A U.S. federal law requiring any company having publicly-traded stock to maintain records that accurately and fairly represent the company's transactions, and have an adequate system of internal accounting controls. Enacted with the intent to bring an end to bribery of foreign officials.
Foreign Exchange	Financial instruments, such as paper currency, notes, and checks, used to make payments between countries.
Forfaiting	A form of finance where a third party purchases trade receivables from an exporter at a discount, and then collects from the importer the payment using the shipped goods as collateral.
Forward Contract	A non-standardized cash market transaction in which the delivery of the commodity is deferred until after the contract has been made.
Forward Delivery	A transaction in which the settlement will occur on a specified date in the future at a price agreed upon on the trade date. (Also called Forward Trade.)
Forward Market	A market in which participants agree to trade some commodity, security, or foreign exchange at a fixed price for future delivery.
Franchise	A license granted by one entity (franchisor) to another entity (franchisee), entitling the franchisee to produce or market a product or service in a specific area, for a specific time.
Fraud Triangle	A model for explaining the factors that cause someone to commit occupational fraud. It consists of three components (opportunity, pressure, and rationalization).
Fraudulent	Intentional perversion of truth in order to induce another to part with something of value or to surrender a legal right.
Fringe Benefit	Non-wage forms of compensation, including pensions and health insurance, provided to an employee in addition to monetary compensation.
Full Cost	The sum of all the costs in all the business functions.
Full-disclosure Principle	The principle that requires companies to disclose any circumstances and events that would make a difference to the users of the statements.
Function	The general end or purpose to be accomplished by an organizational unit, such as administration, selling, or research. It can also be a group of related activities serving a common end.

TERM	DEFINITION
Functional Currency	The currency of the primary economic environment in which the entity operates.
Future	A legal agreement to make or take delivery of a specified instrument at a fixed future date at a price determined at the time of dealing.
Generally Accepted Accounting Principles (GAAP)	The body of accounting rules, methods, and procedures endorsed by the accounting profession, either by convention or by authoritative literature, as a guide to the preparation of financial statements.
General Ledger	The primary record of a company's financial information containing all of the accounts maintained by the company.
Geographical Pricing	Product and service pricing based on the marketplace in which it is provided.
Goal Congruence	A characteristic of a management control system that is structured so that the goals of individuals are consistent with the goals of the organization.
Going Concern	The assumption that, in the absence of evidence to the contrary, a firm will continue to exist indefinitely.
Goodwill	The excess of the fair market value an entity above its identifiable net assets.
Gross Profit Margin	Net sales less cost of sales. (Also called Gross Profit.)
Gross Profit Margin Percentage	Gross profit divided by sales.
Gross Revenue	Total unadjusted revenue. (Also called Gross Sales.)
Hardware	The physical components of a computer system.
Hazard Risk	The risk within a situation that has the potential for harm to humans, property and damage of environment or a combination of these.
Hedging	A method of reducing exposures to fluctuations in prices, exchange rates, or interest rates.
Held-to-maturity Securities	Investments in debt securities that the company plans to hold until they mature.
High-low method	Method of estimating cost behavior by using only the highest and lowest values of the cost driver within the relevant range.
Historical Cost	The amount originally paid for an asset, unadjusted for subsequent changes in value. (Also called Acquisition Cost or Original Cost.)
Holding Gain or Loss	Unrealized gains or losses from holding assets or liabilities during a period of changing prices.

TERM	DEFINITION
Horizontal Analysis	Compares each amount on a financial statement with a base amount for a selected base year. (Also called Common Base Year Statements.)
Hurdle Rate	The minimum acceptable rate of return that companies will consider from a prospective project or investment. (Also called Required Rate of Return.)
Hybrid Cost System	A cost system having characteristics of both Job Costing and Process Costing systems.
IMA Statement of Ethical Professional Practice	A commitment to ethical professional practice made by members of the Institute of Management Accountants (IMA) that includes standards that guide the conduct of members including competence, confidentiality, integrity, and credibility. The statement also includes guidelines for the resolution of ethical conflict.
Impaired Asset	An asset whose fair market value is less than the amount listed on the balance sheet.
Implicit Costs	Costs recognized in particular situations that are not regularly recognized in the accounting records of an entity. (Also called Imputed Costs.)
Implicit Interest Rate	Rate that would have resulted from two independent parties negotiating an interest rate. (Also called Imputed Interest Rate.)
Imposed Budget	A budget that is decided by higher level management without the participation of the manager of the unit to whom that budget relates. (Also called Top-Down Budget.)
Income Statement	A financial statement that reports the results of operations for a period of time. By presenting revenues, expenses, gains, losses, and net income, it measures a company's success over a time period. (Also called Statement of Earnings.)
Income Tax	An annual tax levied by a government on the financial income of an entity.
Incorporated (Inc.)	A company formed into a legal corporation.
Incremental	The difference in cash flow, both as to amount and as to timing, between two alternative courses of action.
Incremental Analysis	A method of analyzing managerial decisions that emphasizes incremental rather than the total costs and benefits associated with an action (or set of alternative actions). (Also called Marginal Analysis or Differential Analysis.)
Incremental Unit-Time Learning Model	A learning curve model in which the incremental unit time (the time needed to produce the last unit) declines by a constant percentage each time the cumulative quantity of units produced is doubled.
Indenture	A written agreement (also called a deed of trust) between a debt issuer and a purchaser, stating the maturity date, interest rate and other terms.

TERM	DEFINITION
Independent Auditor	An external auditor who has no financial or other interest in the client whose financial statements are being examined.
Indirect Cost	Any cost not directly identified with a single final cost object, but identified with two or more final cost objects or with at least one intermediate cost object. All costs other than direct materials and direct labor. (Also called Overhead Cost or Burden.)
Indirect Method	A method of preparing the Cash Flow Statement where net cash flow from operating activities is determined by adding back to or deducting from net income those items that had no effect on cash.
Industry Risk	Risks companies face by virtue of the industry they are in.
Inflation	A rise in the general level of prices of goods and services.
Information System	A system consisting of people, computers, voice and data communications, and methods organized to accomplish data and information operations. Information systems support the running of the enterprise's business.
Information Technology (IT)	IT deals with the use of electronic hardware and software to convert, store, protect process, transmit, and retrieve information.
Inherent Risk	<ol style="list-style-type: none"> <li>1. The risk related to the very nature of the activities the company undertakes in the course of business.</li> <li>2. The auditor's assessment of the likelihood that there are material misstatements in the financial statements before considering the effectiveness of internal controls.</li> </ol>
Initial Public Offering (IPO)	A company's first public issue of common stock.
Input Controls	Controls that ensure the complete and accurate recording of authorized transactions by authorized users and identify rejected and duplicate items.
Insider Trading	The buying and selling of a corporation's stock by individuals with access to non-public information.
Installment Sale	An arrangement where the buyer takes possession of the property immediately but does not receive the deed and title until a series of payments have been made.
Insurance	A form of risk management used to hedge against the risk of a contingent, uncertain loss; the transfer of the risk of a loss from one entity to another, in exchange for payment.
Intangible	A type of non-current asset that has no physical substance and whose value comes from rights or advantages conferred upon the owner. Examples are patents, copyrights, trademarks, brand names, licenses, and goodwill.

TERM	DEFINITION
Integrity	An ethical standard in IMA's Statement of Ethical Professional Practice that requires members to avoid conflicts of interest and refrain from activities that would discredit the profession.
Interest	The cost incurred or amount earned for the use of borrowed capital.
Interest-Bearing	A debt instrument that includes a provision that interest be paid.
Interim Financial Reports	Financial statements prepared for periods shorter than one year, such as monthly or quarterly.
Internal Auditing	An appraisal activity within an entity that measures and reports on the extent to which various organizational policies are followed and goals are met.
Internal Control	Controls established by management to ensure adherence to management policies, safeguarding of assets, and completeness and accuracy of records.
Internal Control Risk	The risk that internal controls are not effective, because of either inadequate set-up and design or lax execution.
Internal Factors	In strategic planning, an analysis of the internal strengths and weaknesses of an entity.
Internal Failure Costs	Costs incurred when an entity detects nonconforming products or services before delivering them to customers. Examples include scrap, rework and retesting.
Internal Rate of Return (IRR)	The discount rate that equates the net present value of a stream of cash outflows and inflows to zero.
International Accounting Standards Board (IASB)	An independent, privately-funded accounting standard-setter based in London, UK, with board members from nine countries, committed to developing a single set of high-quality, understandable and enforceable global financial accounting standards
Internet	The worldwide collection of interconnected networks that use the Internet suite of protocols and permit public access.
Intranet	A private network that integrates Internet standards and applications within an organization's existing computer networking infrastructure.
Inventory	The actual raw materials, supplies, goods on hand, goods in process of manufacture, and goods in transit, in storage, or consigned to others, or the act of accounting for, listing and pricing inventory.
Inventory Turnover	A ratio that measures the number of times a firm's average inventory is sold during a year.
Inventory Valuation	The measurement of the cost assigned to items in inventory.



TERM	DEFINITION
Invested Capital	The amount of capital contributed to a business by equity investors, either directly or through the retention of earnings.
Investment	Expenditure to acquire property or other assets in order to produce income; also, the asset so acquired.
Investment Center	A responsibility center whose performance is measured in the amount of income it earns relative to the investment in its assets.
Job Order Costing	A method of cost accounting that accumulates costs for individual jobs or lots.
Joint Product Costing	A method of cost accounting used when simultaneously producing or otherwise acquiring two or more products (joint products) that must, by the nature of the process, be produced or acquired together. (Also called Common Cost.)
Joint Venture	A business enterprise jointly undertaken by two or more companies, who share the initial investment, risks, and profits.
Journal	A record of original entry that records transactions in chronological sequence.
Just-In-Time Manufacturing (JIT)	A manufacturing process where products are produced or procured as they are needed rather than when they can be made
Kanban	A manufacturing strategy wherein parts are produced or delivered only as needed.
Key Performance Indicators (KPI)	Essential measures for evaluating performance.
Last-In-First-Out (LIFO)	A method of inventory valuation and cost flow assumption, where ending inventory is measured by assigning the most recent costs incurred to costs of goods sold, and the earliest costs to ending inventory.
Law of Diminishing Returns	The principle that states that as increasingly more units of a variable resource are combined with a fixed amount of other resources, use of additional units of the variable resource will eventually increase output at a decreasing rate.
Lead Time	The time expected to elapse between the date an order is placed and the date the goods or services are received.
Leadership by Example	Leaders living and acting by the company's code of ethics, setting a good example, keeping promises and commitments, and supporting others in adhering to the code of ethics. (Also called "Tone at the Top.")
Lean Manufacturing	A production practice that treats expenditures for any goal other than the creation of value for the customer to be wasteful.

TERM	DEFINITION
Learning Curve	A mathematical expression of the phenomenon that incremental unit costs to produce decrease as managers and labor gain experience from practice and as better methods are developed.
Lease	A contract between the owner of property (Lessor) and the user (Lessee) concerning the financial and operating arrangements for the property.
Leasehold	An asset representing the right of a Lessee (User) to use property.
Least-Squares Method	A statistical method for defining a line that best fits the data points and reflects the relationship between variables. (Also called Linear Regression.)
Ledger	A book of accounts; any book of final entry.
Legal Risk	Potential for loss arising from the uncertainty of legal proceedings, such as bankruptcy, trademark challenges, liability claims, etc.
Letter of Credit	A binding document from a bank guaranteeing that a buyer's payment will be received on time and for the correct amount. Often used in international trade to eliminate perceived risks.
Leverage	The extent to which a firm is financed by debt.
Leveraged Buyout (LBO)	Form of ownership change where a company is taken private; the investor finances a significant percentage of the purchase price of the controlling interest with borrowing.
Liability	Probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.
Life-Cycle Costing	The accumulation of costs for activities that occur over the entire life cycle of a product, including design and development, acquisition, operation, maintenance, and service.
Line Item Budget	A budget that classifies items of expense by the nature of the expense, such as salaries, fringe benefits, travel, etc.
Line of Business	A set of operations directed to the production and sale of a distinctive type of goods or services to customers
Line of Credit	An agreement usually by a bank to make loans, not to exceed a specified total amount, when needed by a customer
Linear Programming	A mathematical tool used to optimize a function (the objective function) subject to various constraints, all of which are linear. Often used to find the combination of products that will maximize profits or minimize costs
Liquidation	The process by which a company, or part of a company, is terminated and the assets are redistributed.

TERM	DEFINITION
Liquidity	Ability to convert an asset into cash quickly.
Loan Covenants	Clauses in a loan agreement that require one party to do, or refrain from doing, certain things.
Lockbox System	A system where a financial entity collects and deposits payments on behalf of an entity thereby reducing the mail and processing float.
Long Position	The purchase of a security with the expectation that the security will rise in value.
Long Run	A time period of sufficient length to enable decision makers to adjust fully to a market change; the period of time in which all costs are variable.
Long-Term Debt to Equity Ratio	Measure of the financial leverage of a firm.
Long-Term Liabilities	Debts due for repayment more than one year in the future or beyond the normal operating cycle.
Lower of Cost or Market Rule	A method of valuation that results in an asset being valued at either acquisition cost or market value, whichever is lower.
Maintenance	Expenditures necessary to achieve the originally anticipated useful life of a fixed asset.
Make Versus Buy	The decision either to produce a good or service with an entity's own resources or to buy it from an outside supplier.
Managed Floating Exchange Rates	An exchange rate that is mostly allowed to change (float) as demand in currency supply and demand changes but is often altered (managed) by governments through their buying and selling of certain currencies.
Management	The process of leading and directing all or part of an organization, often a business, through the deployment and organization of resources.
Management Accounting	The process of identification, measurement, accumulation, analysis, preparation, interpretation, and communication of financial information used by internal decision makers in order to plan, evaluate, and control an entity and to assure appropriate use of and accountability for its resources. (Also called Managerial Accounting.)
Management-by-Exception	The management practice of focusing on areas that deserve attention and ignoring areas that seem to be running smoothly.
Management Control	An organized, integrated process and structure through which management attempts to achieve enterprise goals effectively and efficiently.
Management Discussion and Analysis	A discussion of Management's views of an entity's performance, required by the US Securities and Exchange Commission to be included in the Annual Report on Form 10-K.

TERM	DEFINITION
Management Information System	A system that provides past, present, and prospective information about internal operations and external intelligence.
Manufacturing	The transformation of raw materials into finished goods.
Manufacturing Cost	The costs incurred to transform materials into other goods through labor and factory facilities.
Margin of Safety	The excess of budgeted sales over the break-even volume.
Marginal Cost	Cost resulting from the production of one additional unit.
Market Comparables	Estimating the price of an asset by comparing to recent sales prices of assets with similar characteristics.
Market Equilibrium Price	The price of a good or service that will balance the supply and demand.
Market Penetration	A measure of an entity's sales of a given product or service compared to the total sales of all suppliers in the market. (Also called Market Share.)
Market Price	The current price for which a good or service is offered in the marketplace.
Market Risk	The portion of stock price (or portfolio) movement that is attributable to the movement of the market as a whole. (Also called Systematic Risk.)
Market Skimming Pricing	Charging a relatively high price for a short time when a new, innovative, or much-improved product is launched onto a market.
Market Structure	The organizational and other characteristics of a market, in particular those that affect the nature of competition and pricing.
Market-to-Book Ratio	Current stock price divided by book value per share, where "book value" equals common shareholders' equity. (Also called Price-to-Book Ratio.)
Market Value	The value of a good, a service, or a security as determined by buyers and sellers in an open market.
Marketability	A characteristic of a security that allows it to be sold at a reasonable price in a short period of time.
Marketable Securities	1. Liquid securities that can be converted into cash quickly. 2. A balance sheet classification for negotiable financial instruments.
Market-Based Transfer Price	When the price for goods or services charged by one division of a company to another is based on the market price.
Master Budget	A budget that consolidates all budgets into an overall plan and control document, for a budgeted period. (Also called a Comprehensive Budget.)
Matching	The process of recognizing expenses in the same accounting period as that in which the related revenues are recognized.
Material Requirements Planning (MRP)	A system that translates a production schedule into requirements for each component needed to meet that schedule.

TERM	DEFINITION
Materiality	The concept that accounting should separately recognize only those events that are relatively important for understanding an entity's statements.
Maturity Date	The date on which a debt becomes due for payment.
Maturity Matching	The matching of asset and liability maturities; i.e., financing long-term assets with long-term sources and short-term needs with short-term sources.
Maximum Possible Loss	The most pessimistic view of possible loss; when referring to insurance of a building, for example, the risk that the entire structure, its immediate surroundings, and all the building's contents will be destroyed. (Also called Extreme or Catastrophic Loss.)
Merger	The combining of two or more companies.
Mission	The purpose or reason for an organization's existence.
Mix Variance	A variance that results when actual proportions of the components of revenues or costs are different from the proportions used in arriving at the budgeted or planned revenue or cost, or the standard cost.
Mixed Cost	A cost composed of fixed and variable elements.
Modified Accelerated Cost Recovery System (MACRS)	The accelerated depreciation method used for U.S. income taxes.
Monetary Items	Money or a claim (an obligation) to receive (or pay) a sum of money, the amount of which is fixed or determinable without reference to future prices of specific goods and services.
Monopolistic Competition	A situation where there are a large number of independent sellers, each producing a differentiated product in a market with low barriers to entry.
Monopoly	A market structure characterized by a single seller of a well-defined product for which there are no good substitutes and by high barriers to the entry of any other firms into the market for that product.
Monte Carlo Technique	An analytical technique in which a large number of simulations are run to infer the most likely result, using random quantities for uncertain variables.
Mortgage	A claim given by the borrower to the lender against the borrower's property.
Moving Average	A method of calculating central tendency over time in an attempt to identify long-term trends. The average is calculated over a specific time period (e.g. years). For each time period after the initial one, the earliest value is dropped from the calculation and the most recent one is added in, to make an average over the same length of time.
Multinational Company	Company operating in several countries.

TERM	DEFINITION
Multiple Regression	A statistical method used to model the relationship between one dependent (or response) variable and one or more independent (or explanatory) variables by fitting a linear equation to observed data. (Also called Multiple Linear Regression.)
Negotiable CD	A Certificate of Deposit with a very large denomination, usually \$1 million or more. They are usually in bearer form, considered low risk and highly liquid. (Also called Jumbo CD.)
Negotiated Price	In transfer pricing, the price charged by one segment of an organization to another for a product or service that is determined by negotiation between the segments.
Net Income	Income for a period after subtracting expenses from all sources for that period. (Also called Net Earnings.)
Net Loss	The negative amount that results when expenses are greater than revenues.
Net Present Value (NPV)	The difference between the present value of all cash inflows from a project or investment and the present value of all cash outflows required to obtain the investment, or to undertake the project at a given discount rate.
Net Profit Margin	A financial ratio where net income is divided by sales. (Also called Net Profit Margin Percentage.)
Net Realizable Value	1. The estimated selling price in the ordinary course of business less the reasonably predictable cost of completion and disposal. 2. Accounts receivable less allowance for bad debts.
Net Working Capital	Current assets less current liabilities.
Net Working Capital Ratio	A liquidity financial ration that measures net working capital as a percent of total assets.
Network	In data communications, a configuration in which two or more locations are physically connected for the purpose of exchanging data.
Network Controls	Internal controls to insure accurate and secure flows of data in computer and communication systems.
Nominal	A term signifying that a value has not been adjusted for inflation.
Noncumulative Preferred Stock	Preferred stock whose holders do not receive dividends in arrears.
Non-monetary Exchange	The exchange of goods or services between entities for which no monetary instruments are involved. (Also called Barter.)
Non-price Competition	Methods firms use to attract customers other than price reductions, including advertising, free gifts, special packaging, etc.
Nonrecurring Items	One-time occurrences for an entity involving unusual income or expense.

TERM	DEFINITION
Non-value Added	An activity that increases a good's costs without increasing its value to the consumer.
No-par Stock	The shares of a company that carry no nominal or par value.
Normal Cost	A costing system whereby cost objects are assigned the sum of direct materials and labor resources consumed plus an allocation of overhead based on normal capacity.
Normal Profit	The net earnings for an enterprise that recognizes that a reasonable return on capital (both debt and equity) is one of the costs of the enterprise.
Normal Spoilage	Inherent product deterioration that is expected even under the best operating conditions. It is unavoidable in the short run.
Notes Payable	A short-term debt instrument whereby the issuer promises repayment on or before a specified date.
Notes to the Financial Statements	Supplemental disclosures that describe a company's major accounting policies and other relevant information.
Objective Function	In Linear Programming, the variable to be maximized (profit) or minimized (cost).
Objectivity	A trait of financial reporting that emphasizes the verifiable, factual nature of events or transactions and minimizes personal judgment in the measurement process.
Obsolescence	The loss in usefulness of an asset caused by technological or market changes.
Off-Balance Sheet Financing	Financing from sources other than debt and equity offerings that are not reflected on an entity's balance sheet, such as joint ventures, partnerships, and operating leases.
Oligopoly	A market situation in which a small number of sellers comprise the entire industry.
Operating Budget	Detailed projection of all estimated <u>revenue</u> , <u>expenses</u> , and income based on forecasted <u>sales revenue</u> during a given <u>period</u> (usually one year). (Also called Operational Budget.)
Operating Cycle	The average time between the acquisition of materials or services and the final cash realization from the sale of products.
Operating Expenses	Expenses incurred in the course of ordinary activities of an entity.
Operating Income	Earnings before Interest and Taxes.
Operating Lease	A lease that does not meet the criteria for capitalized a lease; accounted for as rental payments.
Operating Leverage	The percent of fixed costs in a company's cost structure.

TERM	DEFINITION
Operating Loss Carrybacks	Reduction of prior years' taxable income by a current net operating loss.
Operating Loss Carryforward	Reduction of future years' taxable income by a current net operating loss.
Operating Profit	The profit from a firm's core ongoing business operation.
Operating Profit Margin	A financial ratio represented as operating profit divided by sales. (Also called Operating Profit Margin Percentage.)
Operational Audit	A process of obtaining and evaluating evidence about operating procedures and events as compared with established criteria of good performance.
Operational Budget	A plan for the revenues and expenses associated with operating activities of a given period. (Also called Current Budget.)
Operational Risk	Risks resulting from breakdowns in internal procedures, people and systems.
Operations	Activities of an entity that deal with producing, delivering and selling goods or services.
Opportunity Costs	The value of the forgone alternatives.
Option	A legal right to buy or sell something at a specific price within in a specified time.
Ordering Cost	The cost of preparing a purchase order, and the special processing and receiving costs related to the number of orders processed.
Organization Structure	The arrangement of responsibilities within an entity.
Organizational Culture	The set of key values, beliefs, understanding and norms of an organization.
Organizational Goals	A desired future state that the organization attempts to attain.
Output Controls	Output controls ensure that a complete and accurate audit trail of the results of processing is reported to appropriate individuals for review.
Outsourcing	The process of purchasing goods and services from outside vendors rather than producing the same goods or providing the same services within the company.
Outstanding Shares	Shares of stock that are owned by shareholders rather than by the corporation.
Overdraft	A facility (usually at a bank or other financial institution) enabling an account holder to borrow up to an agreed amount, often for an agreed time.
Overhead Allocations	Methods used to assign overhead costs to products, activities, or processes
Overhead Budget	The estimated or planned expenditures of an entity for overhead costs (costs other than those directly related to products or services).



TERM	DEFINITION
Overhead	Indirect costs.
Overhead Rate	The ratio of overhead costs for a specific period related to the amount of some measurable causal factor during the same period. (Also called Burden Rate.)
Owners' Equity	Claims of the owners to the firm's assets.
Paid-In Capital	The amount paid by investors in exchange for stock. (Also called Contributed Capital.)
Par Value	1. The dollar amount printed on the face of some stock certificates. 2. The face value of a bond.
Participative Budgeting	A type of budgeting that allows managers to participate in the preparation of budgets. (Also called Bottom-Up.)
Payback Period	The period of time necessary to recover the cash cost of an investment from the cash inflows attributable to the investment.
Payroll Cost	1. Payments to employees for labor services. 2. Taxes and tax-like payments an employer incurs as a legal condition of employment such as unemployment insurance paid to state and federal governments.
Penetration Pricing	Pricing technique of setting a relatively low initial price to attract new customers (a price usually lower than the market price.)
Pension	An amount given to a person usually after retirement.
Percentage-of-Completion Method	A method of accounting for long-term construction contracts where revenue and gross profit are recognized each period based upon the progress of the construction.
Performance	A general term applied to part or all of the conduct or activities of an entity over a period of time, often with reference to some standard.
Performance Evaluation	A management process of reviewing an employee's performance over a period of time, comparing that performance to expectations or standards, and communicating the results to the employee.
Performance Measurement	A quantification of the effectiveness and efficiency with which the objectives of a responsibility center have been accomplished.
Period Cost	An expenditure or loss that is charged to the current period rather than as a cost of the products produced in that period.
Periodic Inventory System	A method of recordkeeping that involves updating the accounting records at the end of the accounting period.
Permanent Differences	Difference between accounting income and tax income that will not reverse in later years.

TERM	DEFINITION
Perpetual Inventory System	A method of recordkeeping that involves updating the accounting records at the time of every purchase, sale, and return.
PEST Analysis	A method of analyzing external factors, including <u>P</u> olitical, <u>E</u> conomic, <u>S</u> ocial and <u>T</u> echnological.
Phishing	An email from someone who falsely claims to be an established, legitimate company.
Physical Inventory	A physical count of all inventories on hand.
Plant	Land, buildings, machinery, equipment, furniture and other fixed assets used to produce products.
Plant-Wide Overhead	A single overhead rate for an entire plant used to allocate overhead costs to products produced in the plant.
Political Risk	The <u>risk of loss</u> when <u>investing</u> in a given <u>country</u> caused by <u>changes</u> in a country's political <u>structure</u> or <u>policies</u> , such as <u>tax laws</u> , <u>tariffs</u> , <u>expropriation</u> of <u>assets</u> , or <u>repatriation</u> of <u>profits</u> restrictions.
Porter's Five Forces	A method of analyzing external factors. Three “horizontal” forces: the threat of substitute products or services, the threat of established rivals, and the threat of new entrants; and two “vertical” forces: bargaining power of suppliers, and bargaining power of customers.
Portfolio	A group of investments held by an institution or individual.
Post-Audit	A set of procedures for evaluating the results of a capital budgeting project.
Post-Retirement Benefits	Payments to which former employees may be entitled once they are no longer employed, including pension benefits, death benefits, health benefits, and life insurance.
Practical Capacity	Measure of capacity that is the maximum level at which the plant or department can operate efficiently.
Preferred Stock	Capital stock that provides a fixed dividend paid before any dividends are paid to common shareholders. It takes precedence over common stock in the event of liquidation.
Premium	The extra amount paid for a security over and above its intrinsic or par value.
Premium on Bonds Payable	The difference between the face value of the bonds and its selling price when the selling price is greater than the face value.
Premium Pricing	The practice of setting a price artificially high in order to encourage a perception of exclusivity or status appeal.
Prepaid Expenses	Payments made for services to be received after the date of payment.

TERM	DEFINITION
Present Value	The value today (or at some specific date) of an amount or amounts to be paid or received later (or at other, different dates), discounted at some discount rate.
Prevention Costs	Costs incurred by an entity to prevent defects in the products or services it produces. Examples include inspection, design, and quality training.
Price Elasticity of Demand	The percentage change in the quantity of a product demanded divided by the percent change in its price. It indicates the degree of consumer response to a variation in price.
Price Variance	The difference between actual price and budgeted price multiplied by the actual quantity of input. (Also called Rate Variance or Sales Price Variance.)
Price-to-Book Ratio	Current Market Price per share divided by Net Book Value per share. (Also called Market-to-Book Ratio.)
Price/Earnings (P/E) Ratio	Current Market Price per share divided by Earnings per share.
Pricing	The process of determining the amount to charge customers for products or services.
Prime Cost	The cost of direct materials and direct labor.
Pro Forma Statements	<ol style="list-style-type: none"> <li>1. Financial statements that have one or more assumptions or hypothetical situations built into the data.</li> <li>2. Budgeted balance sheets and income statements are sometimes referred to as pro forma statements.</li> </ol>
Probability	The likelihood or chance of occurrence of an event.
Probability Distribution	A collection of data that shows all the values that the random variable can take and the likelihood that each will occur.
Process Analysis	The review of business processes including definition, monitoring, measurement, and reporting with the goal of improving processes to meet customer requirements profitably.
Process Costing	A method of allocating manufacturing cost to mass-produced identical or similar products to determine an average cost per unit. Each unit receives the same manufacturing input as every other unit. Refineries, paper mills, and food processing companies are examples that use process costing.
Processing Controls	Controls on the processing stage of an information system, including Run-to-Run controls, Operator Intervention controls, and Audit Trail controls.
Procurement Policies	Rules and regulations to govern the process of acquiring goods and services needed by an organization in order to function efficiently.
Product Cost	The direct material, direct labor, and production overhead cost of a product.

TERM	DEFINITION
Product Life-Cycle	The time span between the initial concept of a product or service and the time when the entity no longer produces the product. Stages are Introduction, Growth, Maturity, and Decline.
Product Line	A grouping of similar products.
Product Mix	The array of products offered for sale by a company.
Production Budget	The planned cost of producing goods during a given period.
Production Costs	The material, labor, and overhead cost of producing products and services. Excludes distribution and selling costs. (Also called Manufacturing Cost.)
Production Volume Variance	The difference between budgeted fixed overhead and applied fixed overhead.
Productivity	The relationship between output and inputs; i.e., the effectiveness of using particular inputs (e.g., labor) to produce an output.
Profit Center	A responsibility center whose financial performance is measured by the difference between its revenue and its expenses or cost.
Profit Margin	The profit margin on sales; net income as a percent of sales revenue.
Profit Plan	A schedule of planned or expected revenues, expenses, assets, and liabilities. A profit plan provides guidelines for future operations and appraisal of performance. (Also called Budget.)
Profitability Analysis	An analysis performed to determine whether a specific product, group of products, or an entire entity is making a profit.
Profitability Index	A measure used in capital budgeting to rank projects, calculated as the present value of the future cash flows from an investment divided by the initial investment. (Also called the benefit-cost ratio.)
Program Budget	A budget that is structured to show the expenses (and often revenues) of the principal programs that the entity will undertake.
Progress Payment	A payment of an interim billing based upon partial completion of a contract.
Project Budget	A budget of costs classified by resources and function for a specific project over the project's life, which may span several operating budget time periods.
Promissory Note	A signed statement promising to pay to a specified person or the bearer a particular sum of money on a fixed date or on demand.
Property, Plant, and Equipment (PP&E)	A balance sheet classification for fixed assets used in business operations. Property, plant, and equipment items are normally grouped and reported at acquisition cost using separate disclosure of accumulated depreciation or depletion. (Also called Plant Assets, Operational Assets, or Fixed Assets.)

TERM	DEFINITION
Prorate	To allocate; to charge an indirect cost to the several cost objects that are assumed to have caused this cost.
Protectionism	Steps taken by countries to protect their domestic industries from foreign competition.
Provision	Estimated liability or expense when the exact amount is not known.
Proxy	Authorization given by one person to another so the second person can act for the first. Often used by shareholders to authorize management to vote shares of stock.
Public Company	A company that has issued securities through an offering, and which are now traded on the open market. (Also called publicly-held or publicly-traded company.)
Public Company Accounting Oversight Board (PCAOB)	A board established by the U.S. Sarbanes-Oxley Act of 2002 which regulates the auditing profession and sets standards for audits of public companies.
Purchase Returns and Allowances	Amounts that decrease the cost of inventory purchases due to returned or damaged merchandise.
Pure Competition	A model of industrial structure characterized by a large number of small firms producing a homogeneous product in an industry (market) that permits complete freedom of entry and exit.
Put Option	An option to sell a particular asset within a specified period of time for a specified price.
Qualitative Factors	Factors that are relevant to a decision but which cannot be expressed numerically.
Quality	The extent to which a product or service conforms to specifications or provides customers the characteristics that were promised.
Quality Assurance	The function responsible for providing assurance that products or services are consistently maintained at a high level of quality.
Quality Control	A process, such as statistical sampling, that monitors the quality of operations.
Quality of Earnings	Refers to how well a reported earnings number communicates the firm's true performance.
Quantity Discount	An allowance given by a seller to a buyer because of the size of an individual purchase transaction or the total size during a specified period.
Quick Ratio	A ratio that measures an entity's ability to pay off short-term obligations using the most liquid current assets (excluding inventory). (Also called Acid-Test Ratio.)

TERM	DEFINITION
Quotas	Limits on the amount of a good produced, imported into the country, exported, or offered for sale.
Random Variable	A quantity, resulting from measurement of a random process, that varies, but whose statistical distribution can be determined.
Rate of Return	A measure of the cash flows from an investment compared to the amount of the investment.
Ratio Analysis	The calculation of significant financial and other ratios and the comparison of these ratios with those of prior years, industry averages, or standards.
Real Option	An alternative or choice that becomes available with a business investment opportunity. For example, by investing in a particular project, a company may have the real option of expanding, downsizing, or abandoning other projects in the future. A value can be calculated using option pricing models.
Realize	Converting non-cash resources and rights into money, used in accounting and financial reporting to refer to sales of assets for cash or claims to cash.
Receivable	An amount owed to an entity, whether or not it is currently due.
Reciprocal Allocation Method	A method for allocating service department costs by including the mutual services rendered among all departments.
Recognition	The process of formally recording an item in an entity's financial statements.
Reconciliation	A schedule or calculation showing how one amount is derived from another amount.
Recourse	The rights of a lender if a borrower does not repay as promised.
Reengineering	A technique used to make improvements within an organization, focusing on identifying and abandoning outdated rules and fundamental assumptions. The end result is a new work method to achieve organizational goals within production, support, or decision-making processes.
Regression Analysis	A statistical analysis tool that quantifies the relationship between a dependent variable and one or more independent variables.
Regression Equation	A statistical technique used to explain or predict the behavior of a dependent variable, taking the form of $Y = a + bx + c$ , where Y is the dependent variable that the equation tries to predict, x is the independent variable that is being used to predict Y, a is the Y-intercept of the line, and c is a value called the regression residual.
Reinvestment Rate	The rate of return at which cash flows from an investment are expected to be reinvested.

TERM	DEFINITION
Relative Sales Value Method	A method used to allocate joint costs in proportion to the sales value of joint products produced.
Relevance	The capacity of information to make a difference in a decision by helping users to form predictions about the outcomes of past, present, and future events or to confirm or correct prior expectations.
Relevant Cost	A cost that should be considered in choosing among alternatives. Only those costs yet to be incurred (future costs) that differ among the alternatives (differential costs) are relevant in decision making.
Relevant Range	The range of economic activity within which estimates and predictions are valid.
Reliability	The quality of information that assures that information is reasonably free from error and bias and faithfully represents what it purports to represent.
Reorder Point	The quantity level of an inventory item that triggers an order to replenish the item.
Reorganization	<ol style="list-style-type: none"> <li>1. A financial restructuring of an organization, such as bankruptcy.</li> <li>2. A restructuring of a firm's operations in order to focus on core activities and outsource others.</li> </ol>
Repair	The activity of putting assets back into normal or expected operating condition without an increase in the asset's previously estimated service life.
Replacement Cost	The cost to replace currently owned assets.
Reporting Currency	The currency in which an entity prepares its financial statements.
Repurchase Agreement	A contract in which the seller of securities, such as Treasury Bills, agrees to buy them back at a specified time and price. (Also called Repo or Buyback.)
Required Rate of Return	The minimum acceptable rate of return on an investment. (Also called Hurdle Rate.)
Required Reserves	The minimum amount of funds that a bank is required by law to keep on hand in order to back-up its deposits.
Research and Development Cost	Outlays made in an attempt to discover new knowledge (research) or to use the results of research to develop new or improved products or processes (development).
Reserve	A term used primarily to segregate part of retained earnings, such as for a reserve for contingencies.

TERM	DEFINITION
Residual Income	A means of measuring performance of an investment center that stresses profit responsibility and the financial management efficiency of the investment center manager. Residual income is typically calculated as the difference between investment center profits and a charge for capital resources committed to the unit.
Residual Risk	The risk remaining after controls have been put in place to mitigate the inherent risk; or, the exposure to loss after all known risks have been mitigated.
Resource Allocation	A plan for using available resources, for example human resources, especially in the near term, to achieve goals for the future; the allocation of resources among the various projects or business units.
Resource Driver	A measure of the quantity of resources consumed by an activity (e.g., floor space occupied by the activity).
Responsibility	A system of accounting that assigns revenues, costs, and/or capital to units of an enterprise (responsibility centers).
Responsibility Budget	A budget that sets forth approved plans structured in terms of the units responsible for carrying them out. It is a control device in that it is a statement of performance expected of each responsibility center manager against which actual performance can be compared.
Responsibility Center	An organizational unit headed by a manager who is responsible for its activities.
Restructuring	A significant modification made to the debt, operations, or structure of a company.
Retained Earnings	Net income over the life of a corporation less dividends.
Return	The change in the value of an investment over an evaluation period, including any cash flows received pertaining to the investment during that period.
Return on Assets (ROA)	A measure of how effective an entity is at earning a return on the assets employed in its business.
Return on Common Equity	A measure that indicates the rate of return on the shareholders' investment. (Also called return on owners' equity.)
Return on Invested Capital	A measure of how effectively a company uses the money (debt or equity) invested in its operations.
Return on Investment (ROI)	The ratio of income earned on the investment to the investment made to earn that income.



TERM	DEFINITION
Revenue	Inflows or other enhancements of assets of an entity or settlements of its liabilities (or a combination of both) during a period from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations.
Revenue Center	A responsibility center in which management control is focused on the revenue that the center earns.
Revenue Recognition	An accounting principle under generally accepted accounting principles (GAAP) that determines the specific conditions under which revenue is recorded in the financial statements.
Revenue-recognition Principle	The principle that revenue should be recognized when it is earned and its collection is reasonably assured.
Rights	An offer made by a company to its shareholders to enable them to buy new shares in the company at a discount from the market price.
Risk	A measure of the variability of the return on investment
Risk Analytics	The process of defining and analyzing the dangers to firms posed by potential natural and human-caused adverse events; quantitative risk analysis estimates the probabilities of adverse events and the likely extent of the losses; qualitative risk analysis defines the threats, determines the extent of vulnerabilities, and devises countermeasures should an adverse event occur.
Risk Assessment	1. In capital budgeting, methods used to identify, and quantify the relative risk of a project. 2. In auditing, a systematic process for exercising and integrating professional judgments about potential adverse conditions and events.
Risk Premium	The return in excess of the risk-free rate of return that an investment is expected to yield; a form of compensation for investors who take on the extra risk.
Risk Response	Steps taken to deal with variance types of risk; four different strategies: avoidance, mitigation, acceptance, or transference. (Also called Risk Treatment.)
Risk Transfer	Shifting risk from one party to another (e.g., insurance).
Risk-Adjusted Return	In capital budgeting, a rate of return that is adjusted for the expected risk of the proposed project. The net present value of a project whose risk is expected to be greater than average is found by using a higher than average discount rate. (Also called Risk-Adjusted Discount Rate.)
Rolling Budget	A moving projection of financial operations for a series of weeks, months, or quarters immediately ahead. At the end of each period, the portion of the projection then lapsed is removed and a new projection for a period of similar length is added to the series. (Also called Continuous Budget.)

TERM	DEFINITION
Safety Stock	A quantity of inventory held to meet unanticipated demand during the time between placement of an order and its receipt into inventory, or unanticipated delays in receiving the replenishment.
Sales Budget	A projection of sales for a given period of time.
Sales Discount	A reduction in the sales price of a product.
Sales on Installment	Arrangements in which the buyer takes possession of the property immediately but does not receive the deed and title until a series of payments (installments) have been made.
Sales-Mix Variance	The difference between budgeted and actual sales caused by a difference between the budgeted and actual proportions of products with different profit margins.
Sales-Volume Variance	The difference between the flexible budget units and the static budget units multiplied by the budgeted unit contribution margin.
Salvage Value	The expected value of an asset at the end of its useful life.
Sarbanes-Oxley	A U.S. law enacted in 2002 to specify the requirements of corporate governance, including accounting issues. It addresses the regulation of the accounting profession, the standards for audit committees of public companies, the certifications management must make, and standards of internal control that companies must meet.
Seasonal Trend	A consistent rise or drop in business activity that occurs due to predictable changes in the calendar.
Scenario Analysis	The process of estimating the expected value of a portfolio, assuming changes in key factors that would affect security values; more broadly, the process of analyzing possible future events by considering alternative possible outcomes.
Scenario Planning	A planning technique where the revenues and/or costs from a few (typically three) cases are compared.
Secondary Offering	The issuance of new stock for public sale from a company that has already made its initial public offering. (Also called Subsequent Offering.)
Securities and Exchange Commission (SEC)	The U.S. federal agency empowered to regulate U.S. financial markets in order to protect investors. All publicly-traded companies have to comply with SEC rules and regulations, including the filing of annual, quarterly, and other disclosure reports.
Segment	One of two or more divisions, product departments, plants, or other subdivisions of an entity reporting directly to a home office, usually identified with responsibility for profit and/or producing a product or service.

TERM	DEFINITION
Segregation of Duties	A basic key internal control used to ensure that errors or irregularities are prevented or detected on a timely basis by employees in the normal course of business. It requires that no single individual should have control over two or more phases of a transaction or operation.
Selling and Administrative Budget	A budget for costs related to selling or marketing (e.g., sales representatives' salaries, commissions, traveling expense, and advertising) and for the general administration of the corporation (e.g., salaries of top officers, rent, and other general office expense).
Selling Costs	Any expense or class of expense incurred in selling or marketing.
Sensitivity Analysis	A technique that identifies and analyzes alternative outcomes of an investment resulting from the alteration of one or more of the variables in the analysis (Also known as What-if analysis).
Separable Costs	For products produced in a joint process, the costs incurred beyond the split-off point that are assignable to one or more individual products.
Service Department	A unit (department) within an entity that provides services to other departments of the entity.
Shareholder	The owner of shares in a company.
Shareholders' Equity	The owner's equity in a corporation. (Also called Stockholders' Equity.)
Short Position	The purchase of a security with the expectation that the security will fall in value.
Short Run	A time period of insufficient length to allow decision makers to adjust fully to a change in market conditions. In the short run, producers may be able to increase output by using more labor or raw materials, but they will not have time to expand the size of their plants.
Short-Term Credit	Credit extended to an entity by a financial institution (Bank Loan), investors (Commercial Paper) or suppliers (Trade Credit).
Shrinkage	The loss of raw materials, work-in-process, or finished goods in terms of weight or volume due to the nature of the product or the methods employed for production, transportation, and storage.
Sight Draft	A draft which is payable on demand.
Simple Regression	A regression model that uses only one independent variable to estimate the dependent variable.
Simulation	A method of studying an operational problem, whereby a model of the system or process is subjected to a series of recalculations of possible outcomes to reflect varying assumptions.

TERM	DEFINITION
Situation Analysis	A method that managers use to analyze an organization's internal and external environment to understand the organization's capabilities, customers, and business environment.
Slack	In budgeting, the difference between the costs or expenses actually required in the operation of a responsibility center and the costs or expenses that have been proposed or approved in the budget.
Software	A collection of computer programs and related data that provide the instructions telling a computer what to do and how to do it.
Solvency	The ability to pay all debt obligations as they become due.
Special Purpose Entity	Entities created by corporations, usually as subsidiaries but sometimes as partnerships or trusts, for a single, well-defined, and narrow purpose, usually the acquisition and financing of specific assets. (Also known as Special Purpose Vehicles.)
Specific Identification	The inventory cost flow method in which the actual cost of the specific goods sold is recorded as cost of goods sold.
Spending Variance	Actual amount of overhead incurred less the expected amount based on the flexible budget for actual inputs.
Spin-Off	A new independent company created by divesting part of a parent company's assets and operations, and distributing shares in the new company to the parent company's shareholders.
Split-Off Point	The point of production beyond which the cost of separate products can be measured. Up to this point, the products were either joint products or byproducts.
Split-Up	Reorganizing a corporation whereby all capital stock and assets are exchanged for the stock of two or more newly established companies, resulting in the liquidation of the parent corporation.
Spot Rate	The exchange rate for immediate delivery of currencies or commodities exchanged; the rate of interest or price being charged currently.
Spreadsheet	A work sheet organized in the form of a matrix with rows and columns
Static Budget	A static budget is a budget that does not change as volume changes.
Standard Cost	The anticipated cost of producing a unit of output; a predetermined cost to be assigned to products produced. Standard cost implies a norm, or what costs should be.
Standard Deviation	A statistical measure of the spread or dispersion of a set of data, calculated as: the square root of the arithmetic mean of the squares of the deviation of each of the class frequencies from the arithmetic mean of the frequency distribution.

TERM	DEFINITION
Start-Up Costs	The costs of preparing to operate facilities which can include costs of designing, tooling, recruiting, and training the labor force before production starts; moving; preparation of facilities; and related general and administrative costs.
Statement of Cash Flow	A statement that classifies cash receipts and payments according to whether they are the result of operating, investing, or financing activities.
Statement of Changes in Shareholders' Equity	An accounting statement presenting the individual components of Shareholders' Equity at various points in time and the changes that occurred within the individual components.
Statement of Earnings (Income Statement)	A financial statement that reports revenues, expenses, gains, and losses for an accounting period, usually compared with amounts in one or more earlier periods.
Statement of Financial Position (Balance Sheet)	The statement of financial position that discloses the assets, liabilities, and equity accounts of an entity at a particular date. Comparable information from one or more prior periods may be included.
Statement on Management Accounting (SMA)	Practice-based monographs on critical issues that affect the profession of management accounting, published by IMA.
Step-Down Method	The method of allocating service department costs that begins by allocating one service department's costs to production departments and to all other service departments. A second service department's costs, including costs allocated from the first, are then allocated to production departments and to all other service departments except the first one, etc. The costs of all service departments are ultimately allocated to production departments.
Stock Dividends	The payment of a dividend to shareholders in the form of stock instead of cash.
Stock Option	The right to purchase or sell a specified number of shares of stock in a company for a specified price at a specified time.
Stock Split	An increase in the number of common shares outstanding resulting from the issuance of additional shares to existing shareholders without requiring payment from the shareholders.
Stock-Out Costs	The contribution margin or other measure of profits not earned because a seller has run out of inventory and is unable to fill a customer's order.
Storage Controls	Internal controls for computer data and business information; e.g. off-site storage, locked rooms, passwords, backups, etc.
Straight-Line Method	A method of depreciating assets in which an equal amount of depreciation is taken each year over the estimated economic life of the asset.

TERM	DEFINITION
Strategic Business Unit (SBU)	A business unit within the overall corporate entity which is distinguishable from other business units because it serves a defined external market where management can conduct strategic planning in relation to products and markets.
Strategic Planning	A process used to make decisions about the long-term goals and strategies of an organization.
Strategic Risk	The possible impact on earnings or capital arising from adverse business decisions, improper implementation of decisions, or lack of responsiveness to industry changes.
Strike Price	Price at which a call option or put option may be exercised (carrying out the terms of agreement). (Also called Exercise Price.)
Subsidiary	A corporation that is controlled, directly or indirectly, by another corporation. The usual condition for control is ownership of a majority of the outstanding voting stock.
Sunk Costs	A past cost which cannot now be changed and therefore should not enter into current decisions for increasing or decreasing present profit levels.
Supply	The total amount of a good or service available for purchase. One of the two key determinants of price along with demand.
Sustainable Equity Growth	The maximum growth rate that a firm can sustain without having to increase financial leverage.
Sustainable Growth Rate	Maximum growth rate a firm can sustain without increasing financial leverage.
Swaps	An arrangement whereby two companies lend to each other on different terms; e.g., one at a fixed interest rate and the other at a variable interest rate.
System	In data processing, a collection of people, machines, and methods organized to accomplish a set of specific functions.
Systematic Risk	The portion of stock price (or portfolio) movement that is attributable to the movement of the market as a whole. (Also called Market Risk.)
Systems Development	A process used to determine the needs of an information system and then designing and implementing the system to meet those needs.
SWOT Analysis	A method of analyzing internal ( <u>S</u> trengths and <u>W</u> eaknesses) and external ( <u>O</u> pportunities and <u>T</u> hreats) as part of strategic planning.
Tactical Planning	A plan for achieving the entity's objectives covering a relatively short time period, usually one year.

TERM	DEFINITION
Target Costing	A cost management tool used to reduce the overall cost of a product over its entire life cycle. The target is a predetermined cost that should result in an acceptable price to customers as well as an acceptable return to the organization.
Target Pricing	Setting a selling price for a product or service based on the value of the product or service to the customer, constrained by competitor's prices of similar items.
Tariffs	Taxes levied on goods imported into a country.
Taxation	The act of a government imposing a levy on individuals or corporations.
Temporary Differences	Difference between accounting income and tax income that will reverse in later years.
Theory of Constraints	A method of optimizing a process when faced with limiting factors and bottlenecks.
Throughput Contribution	Revenue less direct material costs of goods sold.
Throughput Costing	An inventory costing method that treats all costs except those related to variable direct materials as costs of the accounting period in which they are incurred. The variable direct material costs are the only ones included in inventory values. (Also called Super-Variable Costing.)
Time Drafts	A financial instrument that is payable at a specified point in the future.
Time Value of Money	The concept that money now is worth more than in the future, even after adjusting for inflation, because the money now can earn interest until the time the money in the future would be received.
Times Interest Earned	The ratio of earnings before interest, income taxes, and extraordinary items (EBIT) to annual interest expense. A measure of the entity's ability to make interest payments when they are due; i.e., the number of times interest is covered by earnings. (Also called Interest Coverage.)
Top-Down Approach	An approach to auditing internal controls whereby specific risk factors are identified to determine the scope and evidence required in the assessment of internal control. (Also called Risk-based Approach.)
Tracking Stock	A class of common stock that is tied to the performance of a particular division within the corporation; a way of divesting a business line without losing complete control.
Trade Credit	Buying goods and services on account; a form of short-term financing.
Trade Discount	A reduction in the stated selling price based on quantities ordered or purchased.
Trading Securities	Investments in debt and equity securities that the company has purchased to sell in the short term.

TERM	DEFINITION
Transaction Controls	Internal controls within information systems to review individual transactions for accuracy, completeness, and validity.
Transaction Gains or Losses	Gains or losses that result from a change in exchange rates between the functional currency and the currency in which a foreign currency transaction is denominated.
Transaction Processing	The component of an information system that converts economic events into financial transactions, records financial transactions in the accounting records, and distributes financial information to operating personnel.
Transfer Pricing	Price at which goods and services are transferred from one profit center to another.
Translation Adjustments	Adjustments that result when an entity's financial statements are translated from the entity's functional currency into the reporting currency.
Transmission	In communications, the mechanism by which the message is transferred from the sender to the intended recipients.
Treasury Bills (T-bills)	Short term securities issued by the U.S. Treasury with minimum denominations of \$10,000 and maturities of three months, six months and one year. They are issued at a discount to face value.
Treasury Bonds	Long term securities issued by the U.S. Treasury with minimum denominations of \$1,000 and maturities of ten years or more.
Treasury Notes	Medium term securities issued by the U.S. Treasury with minimum denominations from \$1,000 and maturities of two to ten years.
Treasury Stock	Fully-paid capital stock reacquired by the issuing company through gift, purchase, or otherwise, and available for resale or cancellation.
Trial Balance	A list of all of the accounts in the general ledger with their respective debit or credit balances at a given point in time.
Trojan Horse	A computer program that appears to perform a useful and innocent function, however, it is actually a malicious program that is harmful when executed.
Uncollectible Accounts Receivable	An Account Receivable that has been reviewed and a determination made that the amount due will not be collected.
Unearned Revenue	A liability that represents the amount of goods or services that a company owes its customers. The cash has been collected, but the revenue has not been earned.
Unexpected Loss	Loss in excess of the expected average loss.
Unfavorable Variance	The amount by which actual cost exceeds standard or budgeted cost, or the amount by which actual revenue is less than standard or budgeted revenue.



TERM	DEFINITION
Unit Contribution	The difference between the selling price and the variable cost of one unit of a product.
Unit Cost	The cost of one unit of a product or of one unit of a cost element of a product. It is usually obtained by dividing a total cost by the total number of units.
Unrealized Gain or Loss	An increase or decrease in the market value of a company's investments in securities that have not been sold.
Unsystematic Risk	The risk of price change due to the unique circumstances of a specific security or enterprise, as opposed to the overall market. This risk can be virtually eliminated from a portfolio through diversification. (Also called Company Risk.)
Upstream Costs	Costs incurred prior to the time a product is manufactured, including research and development and design.
Utility	The relative satisfaction or need gratification derived from a good or service.
Valuation	The process of determining the value of an asset, a security, or an entire entity.
Value	Attributed worth, expressed in money and applied to a particular asset, to services rendered, to a group of assets, or to an entire business unit, such as the value of a plant or business enterprise.
Value at Risk (VAR)	The worst loss that might be expected from holding a security or portfolio over a given period of time, given a specified level of probability.
Value Chain	The basic business functions that increase the usefulness to the customer of a product or service. For a manufacturing entity, the functions typically include Research and Development, Design, Production, Marketing, Distribution, and Customer Service.
Value Engineering	An evaluation of the activities in the Value Chain to reduce costs without sacrificing customer satisfaction.
Value-Added	Activities and processes that add value or usefulness to consumers of a product or service.
Value-Based Pricing	A pricing strategy where the selling price of a good or service is based primarily on the customer's perceived value of the good or service.
Variable Costing	Method of inventory costing that includes all direct manufacturing costs and variable indirect manufacturing costs as inventory (fixed indirect manufacturing costs are excluded). (Also called Direct Costing.)
Variable Cost	An operating expense that varies directly, and proportionately, with sales or production volume, facility utilization, or some other measure of activity.

TERM	DEFINITION
Variable Overhead Efficiency Variance	Cost driver inputs actually used less the inputs that should have been used multiplied by the budgeted rate.
Variable Overhead Expenses	The portion of overhead costs that increase (decrease) as the number of units produced increase (decrease).
Variable Overhead Spending Variance	Actual amount of overhead incurred less the expected amount based on the flexible budget.
Variance	The difference between actual results and standard budgeted results.
Verifiability	The ability, through agreement among measures, to ensure that information represents what it purports to represent or that the chosen method of measurement has been used without error or bias.
Vertical analysis	Compares each amount on a financial statement with a base amount selected from the same year; e.g., advertising as a percent of sales.
Virus	A self-replicating computer program that infects the host computer by spreading copies of itself into other executable programs.
Vision	A statement describing the aspirations of the organization.
Warrant	A certificate entitling the holder to buy a specified number of shares for a specified time for a specified price.
Warranty	A promise by a seller to correct, for a stated period of time, deficiencies in products sold.
Weighted Average Cost of Capital (WACC)	An average representing the required return on all of a company's securities. Each source of capital, such as stocks, bonds, and other debt, is weighted in the calculation according to its percentage of the company's capital structure.
Weighted Moving Average	A method of calculating central tendency over time in an attempt to identify long-term trends. For each time period after the initial one, the earliest value is dropped from the calculation and the most recent one is added in, to make an average over the same length of time. More recent data points are weighted higher than earlier data points.
Whistleblower	Person who tells the public or someone in authority about alleged dishonest or illegal activities occurring within an organization.
Working Capital	Current Assets less Current Liabilities. (Also called Net Working Capital.)
Work-in-Process Inventory	The costs incurred to date on products for which production has begun but has not been completed.
Write-Off	Charging the cost of an asset to expense or to a loss account.
Yield	Income as a percentage of price.

TERM	DEFINITION
Yield Variance	The difference between the actual quantity of material used for a given amount of product and the standard quantity of the material required for that amount of product, priced at the standard cost per unit of material.
Zero Balance Account	A disbursement (checking) account that has a zero balance. As checks are submitted for payment, funds are transferred from another account to exactly cover the amount of the checks, generally on a daily basis.
Zero-Based Budgeting	Preparing a budget from the ground up, as though the budget were being prepared for the first time. Alternative means of conducting activities and alternative budget amounts are evaluated.

# Exam Test Taking Strategies

The best preparation you can make for taking the exam is thoroughly studying the material and content covered by the examination. Beyond that, however, there are several strategies you can use while taking the test that will help to maximize your performance.

## **1. Answer the questions that you know first.**

Try to avoid dwelling on any particular question(s) for extended periods of time. This will give you the opportunity to answer all of the questions you may know and also allow you to see how much time you have to devote to the questions that are more difficult for you.

## **2. Mark the difficult questions for later review.**

You should approach the test with the expectation that you will encounter at least some questions that you cannot immediately answer. Keep in mind that each question is worth the same number of points (i.e., 1 for correct and 0 for incorrect), regardless of its difficulty. Do not agonize over any particular question, but mark those questions you are unsure of so that you can readily locate them when you are ready to look at them a second time.

## **3. Read each question carefully, noting any key words.**

Pay close attention to the wording of the question. Words such as except, least, and most in a question will have a significant bearing on the correct answer. Think each question through very carefully before answering. You may want to jot down key words that appear in the question, or to rephrase the question in your own words if you are having trouble understanding it.

## **4. Try to answer the question in your mind before actually looking at the options.**

Then see if the answer you formulated exists among the options. Doing this could serve as a sort of verification of the correct answer. You should still carefully review the other options as well, to be certain there isn't a more appropriate answer than the one you selected.

**5. If you are uncertain about an answer, try to make an educated guess.**

You are likely to know something about the topic presented in the question and are, therefore, often able to eliminate at least one incorrect option. If you come across an item for which you truly do not know the answer, try to eliminate those options that you deem likely to be incorrect. This will increase your chances of selecting the correct answer.

**6. Answer ALL of the questions.**

The CMA exams do not employ a penalty for incorrect answers. Points are not deducted from your score for an incorrect answer. There is nothing to gain by leaving questions unanswered; therefore, answer all questions on the exam.

**7. Keep scratch paper organized.**

You will be given a booklet similar to a college “bluebook,” to be used as scratch paper for doing calculations or other notes. Label these notes clearly, and show your work clearly. The scratch paper booklet is turned in at the end, and is not used in scoring your exam. However, when you go back to review your work, it is much easier and quicker if you do it neatly.

**8. Keep track of time**

When taking the multiple-choice test, plan the amount of time given vs. the number of questions that will be presented. Watch the time you invest in each question—don’t get stuck for too long on one question. Keep moving through the questions.

**9. Use the full time allotted to you.**

In a similar vein, there is no advantage in ending the test early. Make the most of any remaining time you may have by reviewing your work, making corrections, or going back to more difficult questions. It is possible that during such review time, you will recall some fact or information which you may have previously overlooked on one or more questions. Though it may seem like a relief to end the test early, bear in mind that the allotted time will end soon enough, and you will want to make the most of the few minutes you have remaining to you to help maximize your score.

**Answer Changing**

One of the great myths about taking tests is that one should not change one’s answer on an objective examination, because the first answer is usually the right one. The admonition to stay with your original answer because your first instinct is likely to be correct is actually incorrect. Numerous studies of testing have shown that, on average, when candidates change their responses to a test question, about 55% of the time the change is made from a wrong answer to a right one, thereby resulting in an increased score. Another 23% of the time, examinees will change their responses from a wrong answer to another wrong answer, resulting in no change to their scores. Only about 20% of the time will candidates change from a right answer to a wrong answer. Therefore, if you have good reason to believe that a change to your answer is warranted, making such a change will more often than not lead to either an increase or at the very worst no

change to your total score. The chances of negatively impacting your total score by making such changes are only likely to be one in five.

### **Test Anxiety**

Test anxiety is natural and is likely to be experienced by most examinees to some degree. Some examinees are able to channel their anxiety in a positive way; others have more difficulty managing their anxiety. Test anxiety can result in mental distractions, mental blocks, and physical symptoms of anxiety that may affect your performance on the exam.

You can reduce your anxiety by recognizing some of the factors that contribute to it. For instance, test-anxious examinees often lose perspective on the situation by seeing the test as a final or one-time opportunity, which it rarely is—make an effort to remind yourself of this when taking the exam. If you draw a “blank” during the exam, do not panic, since such an occurrence is quite normal. Return to the question at a later time or take a few moments to relax until it comes back to you. Try to replace any self-defeating thoughts like “I haven’t studied enough” or “I don’t know the material” with more positive internal messages. The chances are you will know more about the material than you think. Finally, effective study and preparation is a strong, if not the strongest, approach for enhancing self-confidence and reducing nervousness. You should also take advantage of any available exam preparation materials and opportunities, and seek any guidance on ways to enhance your study skills.

### **How to Write Essay Questions for the Part 1 and Part 2 Exams**

The CMA Part 1 and 2 essay questions require you to prepare analyses, discuss the main points of a specific topic, and then examine the implications. These essay questions require you to support your answers with calculations and explanations in order to demonstrate your knowledge and comprehension of a topic, and your ability to apply that knowledge to the situation presented in the scenario.

You will be expected to present written answers and calculations that are responsive to the questions asked, that are presented in a logical manner, and that demonstrate an appropriate understanding of the subject matter. Clues within the questions themselves can be used to help you formulate and organize your responses. Verbs such as *calculate*, *analyze*, *apply*, *explore*, *interpret*, and *examine* can help determine the requirements of the question. Using the same verbs within your answer will help ensure that you are responding directly and completely to the specific questions being asked.

It should be noted that candidates are expected to have a working knowledge of using word processing and electronic spreadsheets. Candidates are also expected to have an understanding of basic financial statements, time value of money concepts, and elementary statistics.

### **Essay Test Taking Tips**

You will be given one hour to complete the essay portion of the Part 1 and 2 exams. To make the best use of your time:

1. Keep track of time as you work through the scenarios. Do not spend too much time on any one question. Note that the points for each scenario are proportional to the suggested time shown for that scenario.
2. Begin by writing key words, thoughts, facts, figures, and anything else that can be used to answer the question.
3. Read the entire question for requirements. Note that you may have more than one task— for example, define ABC and interpret its applicability to XYZ.
4. Begin your answer with one or two sentences that directly answer the question.
5. Make it as easy as possible for graders to give you points. The goal in grading is to award you points, so show your thinking clearly and effectively, detailing any calculations. You can only receive the maximum points the question is worth. Therefore, it is possible to achieve a good score even if you have an incorrect calculation provided you have shown enough other information that the grader can award points for.
6. Proofread your answer for logic, thoroughness, and clarity. It is very important to make sure that the grader will be able to easily follow your thinking and understand your answer.
7. Do not leave a question blank. If you do not have enough time to write a full response, write an outline of your main points to show what you know in order to get partial credit.
8. Use cut/paste or copy/paste functions only within a single question. These functions do not work across questions and can lead to data being lost. If you find your answer to Question 1 also answers Question 2, write “see my answer to Question 1”.



*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

CMA Part 1 – Financial Planning, Performance, & Control  
Examination Practice Questions



**CMA Part 1 – Financial Planning, Performance and Control  
Examination Practice Questions**

1. A company is preparing the sales budget for two potential products. Both products require the use of the same manufacturing equipment, which is only available for 60 hours each month. The contribution margin of product A is \$95 per unit and the contribution margin of product B is \$55 per unit. Product A requires 4 hours of machine time per unit and product B requires 2.5 hours per unit. In order to efficiently allocate the equipment resources, the company should manufacture
  - a. product A, because the contribution margin is more per unit than product B.
  - b. product B, because they can produce more units of that product than product A.
  - c. product A, because it will make better use of the equipment than product B.
  - d. product B, because they can produce many units and still save hours for product A.
  
2. Granger Company is reviewing its standard machine hours per unit to use in its budget for the upcoming year. The machine manufacturer's specifications indicated a unit could be made in 0.75 hours, and a benchmarking study showed a competitor produced at a speed of 0.78 machine hours per unit. Granger's actual results from last year averaged 0.83 machine hours per unit even though a standard of 0.80 machine hours per unit had been established using engineering studies. The standard Granger should use in its upcoming budget is
  - a. 0.75 machine hours per unit.
  - b. 0.78 machine hours per unit.
  - c. 0.80 machine hours per unit.
  - d. 0.83 machine hours per unit.

3. While gathering information to use in preparing the annual budget, a company identifies cost drivers associated with manufacturing costs. Which one of the following is a quantitative analysis method the company can use to measure the average change in the manufacturing costs associated with a change in a cost driver?
- a. Time series analysis.
  - b. Exponential smoothing.
  - c. Regression analysis.
  - d. Learning curve analysis.
4. A company uses simple regression to predict one of its semi-variable costs. The computed equation of  $Y = -25,000 + 2.5X$  appears to have a good visual fit. The cause of the negative term in this equation could be that
- a. the zero level of output is outside of the relevant range.
  - b. too many outliers were included in the data.
  - c. an inappropriate cost driver was used as the independent variable.
  - d. the cost does not exhibit semi-variable behavior.
5. Which one of the following statements best demonstrates the concept of the learning curve?
- a. A learning curve is a linear cost behavior influenced by learning.
  - b. A learning curve is a judgmental method of estimating costs when learning is present.
  - c. A learning curve is a percentage by which average time per unit produced decreases as output doubles.
  - d. A learning curve is a percentage by which average time falls as output increases by 1.
6. Langley Corporation is developing a new product that will be manufactured in pairs. The company recently produced the first two units of this product using 200 hours of direct labor time. If Langley has a 90% learning curve and uses the cumulative average-time learning model, the total direct labor time to manufacture the first four units of this new product is
- a. 400 hours.
  - b. 380 hours.
  - c. 360 hours.
  - d. 324 hours.

7. Sunrise Corporation's actual sales for May were \$22,000,000, a result \$600,000 greater than projected. Actual sales for June totaled \$22,500,000. Using exponential smoothing with a smoothing factor (alpha) of 0.7, Sunrise's projected sales for July would be
- a. \$22,476,000.
  - b. \$22,296,000.
  - c. \$21,856,000.
  - d. \$21,820,000.

8. Quarterly sales results for the first three years of Wheeler Company's operations are

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Quarter 1	\$100,000	\$ 96,000	\$110,000
Quarter 2	150,000	160,000	165,000
Quarter 3	90,000	85,000	82,000
Quarter 4	95,000	100,000	98,000

Wheeler uses time series analysis to forecast its sales. Which one of the following best represents the sales pattern that Wheeler has experienced in the past three years?

- a. Cyclical.
  - b. Irregular.
  - c. Seasonal.
  - d. Trend.
9. Ryotel is conducting market research to determine whether or not to launch a new product. Management believes there is a 60% probability the research will yield favorable results with a 40% probability the results will be unfavorable. If the results are favorable, there is a 70% probability the product will be successful; if the results are unfavorable, the probability the product will be unsuccessful is 75%. If the product is successful, Ryotel anticipates annual profits of \$10,000,000, but if the product is unsuccessful, Ryotel will lose \$4,000,000 each year. The expected value of the new product's annual profit is
- a. \$3,000,000.
  - b. \$3,280,000.
  - c. \$4,000,000.
  - d. \$5,300,000.

10. Last year, Bell Corporation's sales totaled \$200 million. In the current year Bell believes there is a 10% chance sales will decrease to \$180 million due to the loss of a major customer, Rock Company. Bell also estimates there is a 40% probability sales will remain constant, a 30% chance sales will increase to \$240 million, and a 20% probability sales will increase to \$250 million. The expected value of Bell's sales in millions for the current year is
- \$160.
  - \$184.
  - \$202.
  - \$220.
11. A company is in the process of identifying, evaluating, and selecting projects that require a large commitment of funds and will generate benefits well into the future. The company will look at the budget over the life of the projects and review many different options. This is an example of
- a rolling budget since they want information for multiple periods.
  - a flexible budget as they can prepare it using several options.
  - a capital budget to help with the evaluation and identification.
  - an activity-based budget to evaluate all activities for each project.
12. A company uses a type of budgeting that focuses on the cost of the processes required to produce and sell products and services. This type of budgeting is known as
- process budgeting.
  - activity-based budgeting.
  - master activity budgeting.
  - controllability budgeting.
13. A company is focused on continuous improvement and wants to ensure that its budgeting process supports this goal. The company has already eliminated much of the waste from activities during previous budget periods and now wants to concentrate on value-added activities and improving relationships with suppliers and customers. Identify which of the following is the **least** beneficial budget solution for this company.
- Flexible budgeting.
  - Activity-based budgeting.
  - Zero-based budgeting.
  - Continuous budgeting.

14. Blackmore Inc. has a goal to reduce wastefulness and develop a tight, efficient budget. The management team knows that this will take time, so they plan to allow more time and additional resources in the budget process. For the next budget year, a complete review of all activities and functions will be undertaken. The controller has elected to use this year's master budget as the starting point for next year's budget process. Considering management's goals, did the controller make the **most** appropriate choice of budgeting methodologies?
- a. Yes, he should take the current budget and make incremental changes to reduce waste.
  - b. No, he should implement a continuous budget to provide more current information.
  - c. No, he should select zero-based budgeting to allow no costs unless they are justified.
  - d. No, he should select activity-based budgeting to focus on the historical cost patterns.
15. Medico has found that its annual budgets are quickly outdated once actual data is recorded. Sometimes actual preparations have already begun for the period being budgeted by the time the annual budget is finished, which leaves no time to react to changing factors. Medico wants the budget to be as up-to-date as possible, and management is willing to revise budgets as needed. Which budgeting solution would be **most** appropriate for Medico?
- a. Flexible budgeting.
  - b. Activity-based budgeting.
  - c. Zero-based budgeting.
  - d. Continuous budgeting.
16. Paddlemore Canoes planned to sell 100 canoes for the month of April at an average sales price of \$600. Midway through the month, the company had sold 65 canoes and forecasted total sales of 130 canoes at an average price of \$595. The actual sales for April were 120 canoes at an average sales price of \$590. What is the flexible budget amount for canoe sales revenue for April?
- a. \$60,000.
  - b. \$72,000.
  - c. \$77,350.
  - d. \$78,000.

17. A manufacturing company estimates semi-variable costs by using the high-low method with machine hours as the cost driver. Recent data are shown below.

<u>Period</u>	<u>Semi-variable Costs</u>	<u>Machine Hours</u>
1	€100,000	22,000
2	€120,000	30,000
3	€ 96,000	23,600

If 29,000 machine hours were budgeted for the next period, estimated semi-variable costs would total

- a. €16,250.
  - b. €17,000.
  - c. €17,500.
  - d. €21,220.
18. As part of the master budget process, a merchandising company begins to prepare the cash budget for the same period. Which of the following additional information will be most useful to management in preparing this budget?
- a. Sales credit policies, purchasing terms, and planned capital acquisition.
  - b. Projected revenues, projected expenses, and intended financing activities.
  - c. Credit policies, projected expenses, and inventory procurement policies.
  - d. Planned direct material purchases, planned direct labor, and purchasing terms.
19. OneCo had sales during the first three months of operations as follows.

	<u>January</u>	<u>February</u>	<u>March</u>
Cash Sales	\$100,000	\$110,000	\$120,000
Sales on account	320,000	335,000	364,000
Total sales	\$420,000	\$445,000	\$484,000

OneCo finds that it collects cash from credit customers as follows:

Within the first ten days after the month of sale,	
at a 2% early pay discount	60%
In the month after sale, after the discount period	30%
In the second month after sale	10%

What will be OneCo's cash receipts for the month of March?

- a. \$329,480.
- b. \$449,480.

- c. \$466,532.
  - d. \$484,000.
20. In November, a company finalized its budget for the upcoming calendar year. In December, the decision was made to acquire new equipment in January by trading in old equipment and financing the amount due by a loan with principal and interest due at the end of three years. Out-of-pocket costs to operate the machinery would not change. This decision would change which of the company's budgeted financial statements for the upcoming year?
- a. The budgeted balance sheet only.
  - b. Both the budgeted balance sheet and the income statement.
  - c. The budgeted balance sheet, the income statement, and the statement of cash flows.
  - d. Both the budgeted income statement and the statement of cash flows.
21. A project with a 4 year life has a cost of acquisition of \$400,000 and installation cost of \$100,000. If the effective income tax rate is 40%, what is the cash inflow each period due to depreciation expense?
- a. \$40,000.
  - b. \$50,000.
  - c. \$60,000.
  - d. \$75,000.
22. Shoo Inc. owns several retail stores. After all initial budget requests were received for the upcoming year, Shoo's abbreviated pro forma income statement is as follows.

Sales	\$46,000,000
Cost of goods sold	20,700,000
Selling and administrative costs	19,800,000
Operating income	\$ 5,500,000

The cost of goods sold and a 5% sales commission are the only variable costs. Shoo's upper management believes that the sales manager underestimated projected sales units and wants the sales budget increased such that the company can achieve its goal of a 15% return on sales. The amount by which sales must increase to achieve this goal is

- a. \$4,000,000.
- b. \$3,500,000.
- c. \$1,750,000.
- d. \$1,400,000.

23. Alton Machine Company has established a strategic initiative to increase operating income by increasing market share through being the lower cost provider. Assuming the total market size remains the same, and based on the information provided below, has Alton achieved the stated objectives?

	<u>Current year</u>	<u>Next year</u>
Revenues	\$325,000	\$325,000
Cost of goods sold	<u>152,000</u>	<u>146,000</u>
Gross margin	173,000	179,000
Operating costs		
Marketing	100,000	100,000
Administrative	<u>50,000</u>	<u>50,000</u>
Operating income	<u>\$ 23,000</u>	<u>\$ 29,000</u>
Units sold	1,000	1,000

- Yes, because Alton was able to lower costs and increase operating income.
  - No, because Alton did not reduce marketing and administrative costs.
  - Yes, because the statements show a reduced cost of goods sold.
  - No, because it does not appear that Alton has increased market share.
24. Which one of the following best represents a factor that should be considered for medium and long-term cash forecasting?
- Pre-tax cost of capital projects.
  - Current monthly depreciation.
  - Impact of stock split.
  - Non-routine property sales.
25. Ward Corporation's current year-end sales totaled \$240 million and its ending cash balance was \$20 million. Ward anticipates its sales for the upcoming year will be \$260 million. On average, 10% of a year's sales will be collected during the following year. Assume Ward has no uncollectable accounts. Ward also anticipates cash expenses of \$240 million and depreciation of \$5 million. During the next year, Ward intends to spend \$30 million cash for capital improvements. If Ward's policy is to have a minimum of \$10 million cash available at the beginning of each year, its budgeted cash flow projections indicate that it will need outside financing of
- \$0.
  - \$2 million.



- c. \$7 million.
- d. \$26 million.

26. Huffman Corporation's budget indicated that it should produce 50,000 units of finished goods, while incurring 20,000 hours of direct labor and \$150,000 of variable manufacturing overhead. Huffman actually produced 52,000 finished goods units using 22,000 hours of direct labor and incurring \$160,000 of variable manufacturing overhead. If Huffman uses a standard cost system and applies variable manufacturing overhead based upon direct labor hours, its variable overhead spending variance was

- a. \$4,000 unfavorable.
- b. \$5,000 favorable.
- c. \$9,000 unfavorable.
- d. \$10,000 unfavorable.

27. Robinson Corporation's most recent performance report indicated:

	<u>Actual Results</u>	<u>Flexible Budget</u>	<u>Static Budget</u>
Revenues	\$5,000,000	\$4,600,000	\$5,200,000
Variable costs	2,600,000	2,300,000	2,600,000
Fixed costs	2,300,000	2,000,000	2,000,000
Operating income	\$ 100,000	\$ 300,000	\$ 600,000

Robinson's sales-volume variance for operating income is

- a. \$200,000U.
- b. \$300,000U.
- c. \$400,000F.
- d. \$500,000U.

28. Last year Elegis Skin Care Inc. budgeted \$600,000 of fixed overhead for its plant that manufactures moisturizing cream. The \$600,000 was based on a denominator activity level of 40,000 machine hours. There is 0.1 standard machine hours for each bottle of moisturizing cream. 350,000 bottles of moisturizing cream were produced, and 360,000 bottles were sold last year. What was the production volume variance?

- a. \$60,000 unfavorable.
- b. \$75,000 unfavorable.
- c. \$60,000 favorable.
- d. \$75,000 favorable.

29. The controller of a company holds a monthly meeting where any department that has a 10% unfavorable variance to budget must explain the variance and develop a plan to remedy the situation. This is an example of

- a. activity-based management.
- b. cost management.
- c. continuous improvement.
- d. management by exception.

30. TwoCo established a standard direct material cost of \$20 per finished unit for its main product. The standard is calculated using direct materials of 4 pounds and a standard rate of \$5 per pound.

For the month of March, TwoCo expected to produce 32,000 units. During the month, TwoCo purchased and used 130,000 pounds of material and produced 31,000 finished units. The actual price paid per pound was \$5.40. What was the material quantity variance for the month of March?

- a. \$10,000 unfavorable.
- b. \$20,000 unfavorable.
- c. \$30,000 unfavorable.
- d. \$32,400 favorable.

31. A company using a standard cost system established a standard fixed cost per finished unit of \$4.00, and forecasted production and sales of 300,000 units. For the year, the company experienced an unfavorable production volume variance of \$14,000. Which one of the following would be the cause of this variance?

- a. The number of units produced was more than 300,000.
- b. The number of units produced was less than 300,000.
- c. The number of units sold was more than 300,000.
- d. The number of units sold was less than 300,000.

32. Conroy Inc. manufactures a product by mixing two materials as shown by the following standards for one unit of finished goods.

Material A: 4 ounces @ \$1.50/ounce

Material B: 6 ounces @ \$2.50/ounce

Conroy actually produced 25,000 units of finished goods using 105,000 ounces of Material A and 145,000 ounces of Material B. The actual costs of the materials were \$1.48 per ounce for Material A and \$2.55 per ounce for Material B. Conroy's direct material yield variance was

- a. \$0.
  - b. \$5,000 unfavorable.
  - c. \$5,000 favorable.
  - d. \$5,350 unfavorable.
33. Sleep-Fine Company is a mattress manufacturer. The company has a standard direct labor rate of \$25 per hour, 75 direct labor employees, and 50 indirect labor employees. Last week the direct labor payroll was \$90,000 for 3,000 hours worked. The company manufactured 1,000 mattresses. The standard cost sheet allows for 2.5 hours of labor per mattress. The direct labor rate variance was
- a. \$15,000 unfavorable.
  - b. \$27,500 unfavorable.
  - c. \$15,000 favorable.
  - d. \$27,500 favorable.
34. A company manufactures its products in a highly automated, just-in-time environment and uses a standard cost system. The variance that would cause the **most** concern would be a
- a. 10% unfavorable fixed overhead spending variance caused by an unanticipated raise given to production supervisors.
  - b. 5% unfavorable material quantity variance caused by low quality materials that resulted in reworks.
  - c. 6% unfavorable labor efficiency variance caused by the hiring of lower-skilled part-time workers.
  - d. 7% unfavorable variable overhead spending variance caused by the part-time workers using more supplies than predicted.

35. Jonathan Rogers is the marketing manager for a local recreational sports complex. Rogers' role in the marketing department is to advertise events, meet potential clients and plan future events. Rogers is responsible for the revenues and costs of each event and reports to the sports complex manager. Rogers' marketing department is an example of which type of responsibility center?
- a. Investment center.
  - b. Cost center.
  - c. Profit center.
  - d. Revenue center.
36. Multinational transfer prices are sometimes influenced by restrictions that some countries place on the repatriation of profits to the parent firm. Companies can minimize the effect of such restrictions by
- a. decreasing the prices of goods transferred into divisions in these countries.
  - b. increasing the prices of goods transferred into divisions in these countries.
  - c. charging less than the price that would be charged by an unrelated third party for goods transferred into divisions in these countries.
  - d. keeping prices uniform throughout all domestic and foreign units within the company.
37. Division A of Teltriton produces a product that can be sold to outside customers or sold to Division B for further processing. If the performance of managers is evaluated based on division profitability, what transfer pricing method will the manager of Division A request?
- a. Hybrid transfer pricing.
  - b. Cost-based transfer pricing.
  - c. Market-based transfer pricing.
  - d. Standard transfer pricing.
38. Bonnert's Finance Department has purchased a new color copier system for \$10,000 that will help with required reporting. Bonnert's IT Department was planning to purchase a similar system for an additional \$10,000, but has realized that there are enough system resources from the Finance Department's purchase that both groups can share the new equipment equally. In order to fairly allocate the common cost of the equipment, the controller should use the
- a. incremental cost method and allocate \$10,000 to the Finance Department.

- b. stand-alone cost method and allocate \$5,000 to each department.
  - c. constant gross profit method and allocate \$5,000 to each department.
  - d. net realizable value method and allocate \$10,000 to the Finance Department.
39. Trilby's finance group purchased a new project management software package costing \$100,000. For an additional \$10,000, the tax reporting team purchased a smaller application that would have cost \$40,000 to buy separately. The controller will allocate the costs mainly to the finance group, the primary users, and should use the
- a. incremental cost allocation method, allocating \$10,000 to the tax reporting team and \$100,000 to the finance group.
  - b. stand-alone cost allocation method, allocating \$40,000 to the tax reporting team and \$70,000 to the finance group.
  - c. dual costing method and allocate \$55,000 to both user groups.
  - d. method which best reflects the usage of the software package.
40. A manufacturer of men's t-shirts had the following information for last year.

Number of shirts sold and produced	125,000
Sale price per shirt	\$40
Direct manufacturing cost	\$10/shirt
Setup cost	\$100/setup hour
Setup hours	10,000
Shipping costs	\$200/shipment
Number of shipments	4,000
Administrative cost	\$8/shirt

The company's operating profit last year was

- a. \$950,000.
- b. \$1,950,000.
- c. \$2,750,000.
- d. \$3,750,000.

41. A company has four regional divisions. A summary of financial results for the company is shown below.

	<u>North</u>	<u>East</u>	<u>South</u>	<u>West</u>
Operating income	\$1,000	\$ 5,000	\$4,000	\$7,500
Assets	2,500	15,000	8,000	25,000
Liabilities	500	7,000	1,000	5,000
Total equity	\$2,000	\$8,000	\$7,000	\$20,000

Which division has the highest return on investment?

- a. North.
- b. East.
- c. South.
- d. West.

42. Pet Toys Inc. has four customers. Details on revenues and expenses are presented below.

	<u>Customer A</u>	<u>Customer B</u>	<u>Customer C</u>	<u>Customer D</u>
Units sold	10,000	20,000	35,000	50,000
Sales	\$100,000	\$150,000	\$200,000	\$250,000
Cost of goods sold	50,000	60,000	70,000	75,000
Delivery cost	10,000	25,000	30,000	50,000
Order taking	15,000	20,000	25,000	30,000
Administration	30,000	30,000	30,000	30,000
Depreciation	20,000	20,000	20,000	20,000
Utilities	10,000	10,000	10,000	10,000
Profit / (Loss)	\$(35,000)	\$(15,000)	\$15,000	\$35,000

Which customer has the highest customer level operating profit per unit sold?

- a. Customer A.
- b. Customer B.
- c. Customer C.
- d. Customer D.

43. The following is an excerpt from a corporation's most recent financial statements.

Current assets	\$ 120,000
Total operating assets	1,750,000
Current liabilities	85,000
Total liabilities	985,000
Sales	1,240,000
Operating income	\$ 365,000

The corporation's required rate of return is 12%. What is its residual income?

- a. \$155,000.
- b. \$126,800.
- c. \$123,600.
- d. \$113,800.

44. A company is considering the addition of a new product line. The new product line is expected to generate a return higher than the cost of capital, but lower than the current overall return on investment (ROI). If the company decides to add the potential new product line, residual income will

- a. increase.
- b. remain unchanged.
- c. decrease.
- d. become higher than the firm's return on investment.

45. Two examples of the learning and innovation measures of a balanced scorecard are

- a. employee promotion rate and number of environmental incidents.
- b. employee training hours and product defect rates.
- c. number of employee suggestions and finished products per day per employee.
- d. employee turnover rate and number of internal process improvements.

46. Central Vacuum Company recorded the following production costs during the previous two-week period.

<u>Week 1</u>		<u>Week 2</u>	
Direct labor costs	\$17,000	Direct labor costs	\$19,500
Other manufacturing costs	\$25,000	Other manufacturing costs	\$28,000
Units produced	5,000	Units produced	6,000

Assuming both weeks fall in the same relevant range, what was the total fixed cost during week one?

- a. \$5,500.
  - b. \$14,500.
  - c. \$25,000.
  - d. \$26,500.
47. The following information was taken from last year's accounting records of a manufacturing company.

<u>Inventory</u>	<u>January 1</u>	<u>December 31</u>
Raw materials	\$ 38,000	\$ 45,000
Work-in-process	21,000	10,000
Finished goods	78,000	107,000

Other information:

Direct labor	\$236,000
Shipping costs on outgoing orders	6,500
Factory rent	59,000
Factory depreciation	18,700
Advertising expense	24,900
Net purchases of raw materials	115,000
Corporate administrative salaries	178,000
Material handling costs	35,800

On the basis of this information, the company's cost of goods manufactured and cost of goods sold are



- a. \$460,500 and \$489,500, respectively.
- b. \$468,500 and \$439,500, respectively.
- c. \$468,500 and \$470,900, respectively.
- d. \$646,500 and \$617,500, respectively.

48. Consider the cost of goods sold calculation shown below.

Beginning inventory	\$ 100,000
Plus cost of goods manufactured	2,500,000
Less ending inventory	(125,000)
Plus variable overhead efficiency variance	10,000
Cost of goods sold	\$2,485,000

This is an example of which cost measurement technique?

- a. Normal costing.
- b. Standard costing.
- c. Either actual costing or normal costing.
- d. Either normal costing or standard costing.

49. Last year a company had sales of 75,000 units and production of 100,000 units. Other information for the year is shown below.

Direct manufacturing labor	\$187,500
Variable manufacturing overhead	100,000
Direct materials	150,000
Variable selling expenses	100,000
Fixed administrative expenses	100,000
Fixed manufacturing overhead	200,000

Assuming no beginning inventory, what is the total value of ending finished goods inventory under absorption costing?

- a. \$159,375.
- b. \$184,375.
- c. \$209,375.
- d. \$279,175.

50. Using absorption costing, Langdon Company's income for October was \$250,000. Langdon began the month with 10,000 units in finished goods inventory that contained \$30,000 of fixed manufacturing overhead costs. During October, the company produced 330,000 units and sold 325,000 units. The fixed manufacturing overhead for October totaled \$990,000. If Langdon Company used variable costing, its income for October would be

- a. \$265,000.

- b. \$250,000.
- c. \$235,000.
- d. \$234,308.

51. A company manufactures several products that originate in a joint process and are separated at a split-off point. Which one of the following methods of joint cost allocation would allocate the same unit cost to each separable product?
- a. Net realizable value method.
  - b. Sales value at split-off method.
  - c. Physical-quantity method.
  - d. Constant gross-margin percentage method.
52. A specialty instrument manufacturer is in the process of establishing a cost system. The company produces machines for customers that are unique and distinctive. These machines are produced when purchase requests are received from customers. Although some common parts and sub-assemblies are to be held in inventory, no finished goods inventory is maintained since each purchase request is for a customized specialty instrument. The type of cost accumulation system that would be **best** suited for this type of environment would be
- a. backflush costing.
  - b. batch-level costing.
  - c. job order costing.
  - d. process costing.
53. During the production of its single product, a company discovers that an unusual overnight power failure caused an entire day's in-process production to be ruined. How should the cost of these spoiled units be charged?
- a. Added to the cost of future good units produced.
  - b. Written off as a loss.
  - c. Added to the cost of the next day's production.
  - d. Added to general factory overhead.
54. A primary reason for a company to change from traditional costing to activity-based costing (ABC) is that ABC
- a. is a simpler costing method to use.
  - b. reduces product undercosting or overcosting.
  - c. eliminates indirect cost application to products.
  - d. identifies the non-value added costs of production.

55. A company will introduce a new product in Year 1 that is expected to have a three-year life. The company expects to sell 100,000 units each year. Estimated costs are shown below.

	<u>Year 0</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Research/design	\$260,000	\$ 0	\$ 0	\$ 0
Production	0	900,000	900,000	900,000
Marketing	10,000	300,000	100,000	50,000
Customer service	0	40,000	60,000	80,000

If the company uses life-cycle costing to price its new product and desires a 10% mark-up over cost, the selling price for Year 3 would be

- a. \$13.20.
  - b. \$12.21.
  - c. \$11.66.
  - d. \$9.90.
56. Huntley Company has two departments, Machining and Assembly, at its Milwaukee plant. This year's budget for the plant contained the following information.

	<u>Machining</u>	<u>Assembly</u>
Manufacturing overhead	\$4,000,000	\$2,000,000
Direct labor hours	100,000	200,000
Machine hours	40,000	40,000

If the Milwaukee plant allocates manufacturing overhead based on machine hours, which of the following represents the allocation rates?

	<u>Machining</u>	<u>Assembly</u>
a. \$40/hr.	\$10/hr.	
b. \$10/hr.	\$40/hr.	
c. \$100/hr.	\$50/hr.	
d. \$50/hr.	\$100/hr.	

57. Warren Company uses departmental rates to assign overhead to its two products. Budgeted data for the next year are shown below.

	<u>Department 1</u>	<u>Department 2</u>
Overhead costs	\$5,000,000	\$7,000,000
Cost driver	Machine hours	Labor hours
Machine hours	500,000	120,000
Labor hours	100,000	1,400,000

Warren expects to manufacture 400,000 units of Product A during the year. Each unit of Product A requires 0.5 machine hours in Department 1 and 1.5 labor hours in Department 2. The budgeted overhead cost for one unit of Product A is

- a. \$11.03.
  - b. \$12.50.
  - c. \$12.73.
  - d. \$15.00.
58. A capital-intensive manufacturer of large construction equipment has a manufacturing process that relies heavily on specialized machinery. This machinery is run by a relatively few number of highly skilled laborers. In determining its predetermined overhead rate, what allocation base should the company use?
- a. Sales dollars.
  - b. Direct labor costs.
  - c. Machine hours.
  - d. Direct labor hours.

59. A company has two service departments and is planning to use the reciprocal method to allocate service department costs. The following information from operations was collected for analysis.

<b>Budgeted overhead costs</b>	
Human resources	\$400,000
Data processing	70,000
Machining	225,000
Assembly	125,000
<b>Services furnished</b>	<b><u>Labor Hours</u></b>
Human resources to	
Data processing	3,000
Machining	5,000
Assembly	8,200
Data processing to	
Human resources	600
Machining	3,500
Assembly	600

Which one of the following equations represents the complete reciprocated cost of the Data Processing Department?

- $\$70,000 + [(600/4,700) \times \$400,000]$ .
  - $\$70,000 + [(3,000/16,200) \times \$400,000]$ .
  - $\$70,000 \times (600/4,700) + \$350,000 \times (3,000/16,200)$ .
  - $\$400,000 + [(600/16,200) \times \$70,000]$ .
60. Which one of the following is **not** an expected benefit of implementing a just-in-time (JIT) production system?
- Lower total storage costs.
  - Lower total set-up costs.
  - Lower manufacturing lead time.
  - Lower total rework cost.
61. Assume that a manufacturing firm maintains its product cost accounting records using throughput costing. At the end of the fiscal year,

- a. reported net income will be less than that which would be reported using activity-based costing.
  - b. an adjusting entry will be required to restate the inventory accounts for external reporting purposes.
  - c. the firm should convert its records to a direct costing basis.
  - d. the resulting production volume variance should be closed to Cost of Goods Sold.
62. A company has budgeted overhead costs at its normal capacity based on machine hours. Variable factory overhead is \$180,000; and fixed factory overhead is \$560,000. If the firm operates at a slightly lower rate of activity, it will expect total
- a. fixed factory overhead of \$560,000 and a lower hourly rate for variable overhead.
  - b. fixed factory overhead of \$560,000 and the same hourly rate for variable overhead.
  - c. fixed factory overhead of \$560,000 and a higher hourly rate for variable overhead.
  - d. variable overhead of less than \$180,000 and a lower hourly rate for variable overhead.
63. An outside consultant has been hired by a manufacturing firm to evaluate each of the firm's major products beginning with the design of the products and continuing through the manufacture, warehousing, distribution, sale and service. The consultant has also been requested to compare the manufacturer's major products with firms that are manufacturing and marketing the same or similar products. The consultant is to identify where customer value can be increased, where costs can be reduced, and to provide a better understanding of the linkages with customers, suppliers, and other firms in the industry. The type of analysis that the consultant **most** likely has been asked to perform for the manufacturing firm is called a
- a. balanced scorecard study.
  - b. benchmarking analysis.
  - c. SWOT (strengths, weakness, opportunities, threats) analysis.
  - d. value-chain analysis.
64. A small computer manufacturer employs 25 plant workers in its main manufacturing facility. The performance improvement team has identified the following activities and relative time demanded by each activity.

<u>Activities</u>	<u>Percentage of workers time</u>
A. Assembly of the computer components	25%
B. Installing software	40%
C. Inspecting and testing the assembled units	25%
D. Moving the finished units into the storage area	10%

Classify the four activities as value-added and nonvalue-added.

- | <u>Value-added</u> | <u>Nonvalue-added</u> |
|--------------------|-----------------------|
| a. A, B, and C     | D.                    |

- |                |          |
|----------------|----------|
| b. A and B     | C and D. |
| c. A, B, and D | C.       |
| d. B and C     | A and D. |

65. A company implemented a benchmarking program to compare itself to others in the industry. Through this program the company management team discovered that a larger competitor has a lower overhead per unit sold. Based on this information, management concluded that steps must be taken to reduce overhead to remain competitive. Which one of the following is the best critique of this conclusion?

- a. Benchmarking should be performed with companies of similar size and sales.
- b. Fixed overhead is difficult to control and should not be benchmarked.
- c. Cost per unit is just one area of competitiveness and others should be looked at.
- d. Companies operate very differently and comparisons should not be made.

66. A manufacturer of high technology consumer goods incurred the following quality-related expenses last year.

Equipment maintenance	\$ 5,000
Spoilage	10,000
Liability claims	50,000
Supplier evaluations	5,000
Scrap	20,000
Customer support	50,000
Finished product testing	25,000

What is the total cost related to prevention?

- a. \$165,000.
- b. \$35,000.
- c. \$10,000.
- d. \$5,000.

67. The new Controller of a company is evaluating her department for proper segregation of duties. Evaluate the following statements and determine which set of duties is acceptable to be performed by the same employee while still maintaining proper segregation of duties.

- a. Receive the company's deposits and record the transaction.
- b. Collect the cash and checks and take the deposit to the bank.
- c. Enter expenses into the general ledger and pay the credit card bills.
- d. Authorize cash disbursements and deliver the payments.



68. When assessing inherent risk during a compliance audit the internal auditor should consider each of the following factors **except** the
- a. complexity of the specified compliance requirements.
  - b. effectiveness of the entity's internal controls over the specified compliance requirements.
  - c. length of time the entity has been subject to the specified compliance requirements.
  - d. entity's prior experience with complying with the specified requirements.
69. A U.S. publically traded company completed its annual audit and internal control assessment. An external auditor attested to the financial statements by giving an audit opinion but did not report on management's assessment of the internal controls. Did the company violate section 404 of the Sarbanes-Oxley Act?
- a. No, the company was still in compliance due to the safe harbor rules.
  - b. Yes, because the company did not include a certification from the CFO and CEO.
  - c. No, but the company has violated Section 302 of the Sarbanes-Oxley Act.
  - d. Yes, because the company did not have an auditor attest to and report on the assessment of the internal controls.
70. In accordance with the Sarbanes-Oxley Act, which one of the following certification is not included in periodic statutory financial reports?
- a. The signing officers have reviewed the report and the report does not contain any material untrue statements or material omissions.
  - b. Any significant changes in internal controls or related factors that could have a negative impact are disclosed.
  - c. A list of all deficiencies in the internal controls and information on any fraud that involves employees who are involved with internal operations.
  - d. The major internal control provisions of the Foreign Corrupt Practices Act.

71. Which one of the following **best** describes an important provision of the U. S. Foreign Corrupt Practices Act?
- a. Auditors cannot provide bookkeeping or other services related to the accounting records or financial statements of the audit client.
  - b. Companies must follow the laws of the company's home country as well as the laws of the countries where any foreign subsidiaries are located.
  - c. The CEO and CFO must certify that they have no knowledge of any corrupt practices occurring in any overseas subsidiaries of U.S. companies.
  - d. The internal accounting controls should be examined and if material weaknesses are found, controls must be strengthened.
72. Which one of the following statements best describes the internal control requirements of the US Foreign Corrupt Practices Act of 1977?
- a. It is unlawful to bribe foreign government officials to obtain or retain business.
  - b. Management must establish systems to provide assurances that transactions are authorized.
  - c. All major cash payments and receipts must be reported to the U.S. Department of the Treasury.
  - d. It is unlawful to bribe officers or officials of foreign corporations to obtain or retain business.
73. Which one of the following is the **best** description of the internal audit function?
- a. It serves third parties who need reliable financial information.
  - b. It focuses on the historical information in the financial statements.
  - c. It evaluates controls designed to ensure that entity goals are met.
  - d. It works to detect fraud related to material misstatements.

74. Which one of the following statements most accurately explains the difference between the internal audit department's responsibilities in reviewing compliance and their responsibilities in operational auditing?
- a. Compliance reviews are a means of ensuring that the organization complies with laws, rules and regulations, while operational audits are conducted primarily to identify operational problems and enhance efficiency and effectiveness of operations.
  - b. Compliance reviews are performed to ensure that the entity's financial statements are in accordance with accepted accounting principles, while operational audits are performed at the departmental level.
  - c. Compliance reviews are performed to assure that employees comply with company rules and guidelines, while operational audits are directed toward specific financial issues as directed by management.
  - d. Compliance reviews are directed toward ensuring that the organization complies with rules and regulations, while operational audits are conducted to ensure that the entity's financial statements are in accordance with accepted accounting principles.
75. A company's information system has a password matrix that allows a user to have only permission rights needed to perform the user's duties. This type of control is known as a(an)
- a. access control.
  - b. data validation control.
  - c. application control.
  - d. data capture control.
76. Which one of the following best depicts the path and timing of data as it moves through an accounting information system?
- a. Fishbone diagram.
  - b. Program flowchart.
  - c. System flowchart.
  - d. Decision table.

77. Which one of the following statements on the contingency planning for disasters is not true?
- a. A disaster recovery plan must be implemented at the lowest levels in the company.
  - b. The disaster recovery plan should be thoroughly documented and approved.
  - c. The design of the disaster recovery plan should include an evaluation of the company's needs, a list of priorities for recovery, and a set of recovery strategies and procedures.
  - d. A very important part of a disaster recovery plan is the specification of the backup site.
78. The IT team of a company created a disaster recovery plan for their employer. The plan includes several versions of backups of data and systems, including at least one copy kept off site. The plan also includes an off-site location selected for its reduced chance of natural disasters like floods and hurricanes. This location is guarded by a security service. The IT manager has a copy of the plan at home, and the plan is regularly tested. Select the statement below that **best** describes the plan.
- a. The disaster recovery plan has everything required because the company can access the data backups and continue processing.
  - b. The disaster plan needs to ensure that there are copies of the disaster recovery plan accessible on the computer system.
  - c. The disaster recovery plan needs to include a disaster recovery site that is a hot or cold site with necessary capabilities.
  - d. The disaster recovery plan needs to include instructions for appointing a recovery team when a disaster occurs.
79. A new management accountant is concerned about complying with the ethical standard of competence in IMA's Statement of Ethical Professional Practice. Which one of the following is **not** required under the standard of competence?
- a. Maintain expertise in all areas of accounting.
  - b. Continually develop knowledge and skills.
  - c. Perform duties in accordance with relevant regulations and standards.
  - d. Provide recommendations that are accurate and timely.

80. Scott Jones, a new accounting clerk at a firm that had recently terminated several employees due to budgetary cutbacks, accidentally viewed his supervisor's biweekly paycheck. Not realizing that the paycheck included an annual bonus, Jones erroneously multiplied the gross pay by 26 to find annual earnings. Jones was amazed that his supervisor appeared to earn more than twice the local average for employees in an accounting supervisory position. Jones discussed this situation with a friend, a recently terminated employee of the company who now worked for a local newspaper. As a result of this discussion, the supervisor's "outrageous" salary was made public. Which one of the standards of IMA's Statement of Ethical Professional Practice, did Jones' actions violate?
- a. Competence.
  - b. Confidentiality.
  - c. Integrity.
  - d. Credibility.

Answers – CMA Part 1 Practice Questions

- |       |       |       |
|-------|-------|-------|
| 1. c  | 31. b | 61. b |
| 2. c  | 32. a | 62. b |
| 3. c  | 33. a | 63. d |
| 4. a  | 34. b | 64. b |
| 5. c  | 35. c | 65. a |
| 6. c  | 36. b | 66. c |
| 7. b  | 37. c | 67. b |
| 8. c  | 38. b | 68. b |
| 9. b  | 39. a | 69. d |
| 10. d | 40. a | 70. d |
| 11. c | 41. c | 71. d |
| 12. b | 42. a | 72. b |
| 13. a | 43. a | 73. c |
| 14. c | 44. a | 74. a |
| 15. d | 45. d | 75. a |
| 16. b | 46. b | 76. c |
| 17. c | 47. b | 77. a |
| 18. a | 48. d | 78. d |
| 19. b | 49. a | 79. a |
| 20. c | 50. c | 80. b |
| 21. b | 51. c |       |
| 22. a | 52. c |       |
| 23. d | 53. b |       |
| 24. d | 54. b |       |
| 25. b | 55. a |       |
| 26. b | 56. c |       |
| 27. b | 57. b |       |
| 28. b | 58. c |       |
| 29. d | 59. b |       |
| 30. c | 60. b |       |



*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

## CMA Part 1- Financial Planning, Performance and Control Examination Practice Questions

**Part 1 – Financial Planning, Performance and Control**  
**Examination Practice Questions**

1. A common characteristic of simple regression analysis, learning curve analysis, and time-series analysis is that they all
  - a. can accommodate nonlinear behavior.
  - b. use past data to estimate future values.
  - c. adjust for inflation.
  - d. establish causation.
  
2. Bosworth Inc. sells its product for \$100 per unit while incurring variable operating costs of \$60 per unit and \$25,000,000 of fixed operating costs. The management team believes there is a 20% probability sales for the upcoming period will be 600,000 units, a 50% probability sales will be 800,000 units, and a 30% probability sales will be 1,000,000 units. The expected value of Bosworth's operating profit for the upcoming period is
  - a. \$32,800,000.
  - b. \$8,200,000.
  - c. \$7,800,000.
  - d. \$7,000,000.
  
3. Sanford has a beginning cash balance of \$10,000 and expects \$40,000 in cash receipts for each of the next two months. Typically, disbursements total about \$20,000 per month. Sanford's payables policy has been to pay the bills upon receipt to maintain good vendor relationships and take advantage of any discounts. In month 1, the company also expects a one-time \$40,000 bill for a patent application. Based on this information, select the statement below that reflects the **most** appropriate action that Sanford should take relative to the company's cash position during the two-month period.
  - a. Sanford should arrange a short-term line of credit large enough to cover the projected \$10,000 shortfall during the first month.
  - b. Sanford should defer disbursements to maintain a desired level of cash.
  - c. Sanford should finance the \$40,000 payment over a longer term, but with a higher interest rate.
  - d. No action is necessary as Sanford will have sufficient cash during the two-month period.



4. Michael Corporation's flexible budgeted cost for indirect materials, a variable overhead cost, is \$2.15 per unit of output. The company's flexible budget performance report for last month showed a \$4,500 favorable variance for the indirect materials. During that month, 19,700 units were produced. Budgeted activity for the month had been 19,000 units. The actual costs incurred for indirect materials were
- \$1.89.
  - \$1.92.
  - \$2.38.
  - \$2.63.
5. Bettis Company began business on January 1 of the current year. The firm's standard cost system allows for 4 yards of fabric at \$1.55 per yard for each finished unit of product. During the year, Bettis produced 20,000 units of finished product and sold 18,000 units. Although there was no work-in-process inventory at the end of the year, there were 2,100 yards of fabric included in the ending raw materials inventory. If the materials quantity variance was \$1,240 unfavorable, how many yards of fabric did Bettis buy during the year?
- 72,800 yards.
  - 74,900 yards.
  - 80,800 yards.
  - 82,900 yards.
6. Miller Company's actual and budgeted sales for its premier line of optical frames for the month of October is as follows.

	<u>Actual</u>	<u>Budget</u>
Units	24,000	28,000
Sales Dollars	\$336,000	\$350,000

The sales volume variance is

- \$14,000 Unfavorable.
- \$50,000 Unfavorable.
- \$56,000 Unfavorable.
- \$56,000 Favorable.

7. Willow World is a privately-held manufacturer of home furnishings based out of the United States. Willow World has one subsidiary in Mexico that exports all of its manufactured products to the United States and does not currently sell any of its manufactured products in Mexico. The Mexican subsidiary incurs all of its expenses in Mexican pesos and all of its revenues are in U.S. dollars. The U.S. operations are conducted only in U.S. dollars. What will be the financial impact on the company's return on investment (ROI) if the Mexican peso rises against the U.S. dollar assuming no operational changes?
- a. A decrease in the ROI.
  - b. An increase in the ROI.
  - c. No change in the ROI.
  - d. Not enough data has been provided.
8. Ramirez Inc. opens a new retail store every two years and currently operates in 24 different locations. Ramirez uses return on investment (ROI) to evaluate store performance. The **best** comparison among stores will be achieved if Ramirez values long-term assets by
- a. book value.
  - b. current value.
  - c. historical cost.
  - d. historical cost adjusted for inflation.
9. The headquarters of a national restaurant chain is trying to better understand the profitability of the Savannah location. Savannah's total assets are \$3,500,000, consisting of \$1,000,000 land, \$2,000,000 buildings and equipment, and \$500,000 intangibles. The net profit is \$475,000, and the required rate of return is 12%. Savannah's return on investment (ROI) is
- a. 23.7%.
  - b. 19.0%.
  - c. 15.8%.
  - d. 13.6%.

10. Which statement below **best** represents a benefit of residual income (RI) as a performance measure?
- a. RI blends all ingredients of profitability into one percentage that is easily comparable.
  - b. RI is more likely to promote goal congruence in a low profit location versus return on investment.
  - c. Managers can increase their RI by decreasing the internal rate of return.
  - d. Managers maximize an absolute amount and invest as long as the required return is earned.
11. An advantage of using a cost-based transfer price is that it
- a. is useful for evaluating subunit performance.
  - b. preserves subunit autonomy.
  - c. achieves goal congruence.
  - d. is easy to implement.
12. The work cell concept relates to
- a. a just-in-time production system.
  - b. material requirements planning.
  - c. throughput costing.
  - d. enterprise resource planning.

13. When using throughput costing, inventoriable costs would include **only**
- a. direct material, direct labor, variable manufacturing overhead, and fixed manufacturing overhead costs.
  - b. direct material, direct labor, and variable manufacturing overhead costs.
  - c. direct material and direct labor costs.
  - d. direct material costs.
14. Trout Company manufactures a single product. During the manufacturing process, a small number of units do not pass final inspection and are destroyed. What is the appropriate accounting treatment for the cost of these units? The cost should be
- a. added to the cost of good units produced.
  - b. ignored as immaterial.
  - c. expensed as incurred.
  - d. added to the cost of warranties.
15. Which one of the following would be classified as an internal failure cost on a quality cost report?
- a. Depreciation of inspection equipment.
  - b. Returns and allowances.
  - c. Net cost of scrap.
  - d. Final product testing and inspection.

16. Last year, a company had sales of 75,000 units and production of 100,000 units. Other information for the year is shown below.

Direct manufacturing labor	\$187,500
Variable manufacturing overhead	100,000
Direct materials	150,000
Variable selling expenses	100,000
Fixed administrative expenses	100,000
Fixed manufacturing overhead	200,000

Assuming no beginning inventory, what is the cost of goods sold under variable costing?

- a. \$553,125.
  - b. \$478,125.
  - c. \$403,125.
  - d. \$328,125.
17. Almax Corporation produces and sells smart phones. The following information relates to Almax's operations for the last year.

Variable cost per unit	\$5.20
Total fixed manufacturing overhead cost	\$260,000
Total fixed selling and administrative cost	\$180,000
Units produced and sold	400,000

Using absorption costing, what was Almax's cost per unit last year?

- a. \$4.55.
  - b. \$5.00.
  - c. \$5.85.
  - d. \$6.30.
18. If all of the joint products are sold at the split-off point and an overall profit is made on all of the products, which one of the following joint costing methods will result in the same gross margin percentage on each joint product?
- a. Sales value at split-off method.
  - b. Physical measures method using sales volume.
  - c. Physical measures method using production volume.
  - d. Physical measures method using weight.

19. All of the following would be considered manufacturing overhead costs by a book publisher **except**
- depreciation on the printing equipment.
  - wages paid to the production supervisor.
  - rent on the warehouse containing the finished books inventory.
  - fire insurance on the printing facilities.
20. Value chain analysis can be described as the process of
- comparing levels of performance against the best levels of performance in similar companies.
  - tracking business function costs, from initial R&D to final customer support, over several years.
  - budgeting on the expectation that labor per unit will decline as units of production increase.
  - analyzing the sequence of business functions in which customer usefulness is added to products or services.
21. Which one of the following is the focus of activity-based management?
- To improve allocation of indirect production costs.
  - To reduce the number of cost pools.
  - To increase the number of volume-related allocation bases.
  - To improve the effectiveness of activities.
22. Huntley Company has two departments, Machining and Assembly. This year's budget for the plant contained the following information.

	<u>Machining</u>	<u>Assembly</u>
Manufacturing overhead	\$4,000,000	\$2,000,000
Direct labor hours	100,000	200,000
Machine hours	40,000	40,000

If the plant uses a plantwide overhead rate based on direct labor hours, what would the rate be?

- \$10 per hour.
- \$20 per hour.
- \$40 per hour.
- \$75 per hour.

23. Huntley Company has two departments, Machining and Assembly, at its Milwaukee plant. This year's budget for the plant contained the following information.

	<u>Machining</u>	<u>Assembly</u>
Manufacturing overhead	\$4,000,000	\$2,000,000
Direct labor hours	100,000	200,000
Machine hours	40,000	40,000

Assume the Milwaukee plant uses machine hours as the overhead base in machining and direct labor in Assembly. If Job 2420 uses 20 direct labor hours in each department, 10 machine hours in Machining and 5 machine hours in Assembly, how much overhead would be assigned to the job?

- a. \$1,100.
  - b. \$1,200.
  - c. \$2,100.
  - d. \$2,200.
24. The director in charge of a company's data center is reviewing the controls surrounding the access to the hardware in the data center, which is located offsite. The control below that **best** identifies what the director should consider in order to protect access to the hardware is
- a. limitation of physical access.
  - b. logical access controls.
  - c. application controls.
  - d. authentication controls.

25. The top-down approach to the audit of internal control over financial reporting can **best** be described as beginning
- a. at the financial statement level, focusing on entity-level controls, and working down to significant accounts and disclosures and their relevant assertions.
  - b. with interviewing top management and observing the actions of top management with respect to the entity's control environment.
  - c. with considerations of the controls over assets and their related transactions, and progressing to controls over liabilities, and finally controls over equities.
  - d. by identifying significant accounts and disclosures for each assertion that has a reasonable possibility of containing a material misstatement.
26. Quentin James is a new accountant assisting in the month-end close of the books for Sheldrake Ltd. His supervisor told him to accrue a large receivable and said that he would provide the supporting documentation later. James made the accrual and the books were closed. Subsequently, James found out that the company would have missed the earnings estimate without the receivable. James requested the documentation, and the supervisor could not provide it. Other associates told James that this supervisor had directed that undocumented entries be recorded in the books in the past, and that the former accountant had left Sheldrake because he was uncomfortable making the entries. Recommend the **best** course of action for James.
- a. James should evaluate the materiality of the receivable to determine if it is worthy of follow-up.
  - b. James should confront his supervisor about the undocumented receivable that appeared to be inaccurate.
  - c. James should present this issue to his supervisor's manager to resolve the issue.
  - d. James should report to the Board of Directors that Sheldrake did not truly meet the earnings estimate.



27. Chris Benedict was recently tried and convicted in court for producing and selling illegal narcotic drugs. None of the activity occurred during work hours, and Benedict performed duties as a management accountant without incident during the period of illegal activity. Benedict has argued that because the illegal activity was unrelated to Benedict's service as a management accountant, no ethical violation had been committed. Which provision of the IMA's Statement of Ethical Professional Practice is **most** likely to apply to Benedict's illegal actions?
- a. Competence.
  - b. Confidentiality.
  - c. Integrity.
  - d. Credibility.
28. An accountant has concerns that a particular transaction is being recorded in a manner that does not reflect the nature of the transaction and believes that alternative accounting is being used to avoid recording the appropriate expense for a period. The accountant attempted to speak to the accounting manager but the manager rebuffed the accountant and said there was no time to discuss the issue further. According to IMA's Statement of Ethical Professional Practice, what is the next appropriate step the accountant should take regarding this issue?
- a. Discuss the issue with the next level of management over the accounting manager.
  - b. Discuss the issue with the company's independent accounting firm.
  - c. Discuss the issue with the firm's legal counsel.
  - d. Resign from the position with the company.
29. The **best** explanation of how the efficient allocation of organizational resources is planned during the budgeting process is that a budget
- a. demonstrates how important it is to have additional spare resources on hand in case the actual results vary from the budget.
  - b. demonstrates how a company can pull resources from bottlenecks to apply them to other areas to attain goals.
  - c. identifies the resources and commitments required to fulfill the organization's goals for the period identified.
  - d. is a process for evaluating projects needed and related external financing required to meet resource requirements.

30. A manufacturer makes picture frames which require one sheet of glass each. Each sheet of glass comes from one larger sheet that is cut into four pieces. Normally, the company has been able to produce 400 frames using 110 large sheets of glass, as there is typically some breakage during the process. In order to improve its operation, the company has set their standard for glass material usage at 100 sheets of large glass to manufacture 400 frames. Which one of the following statements **best** describes the type of standard the company has set?
- a. It is an ideal standard because it would normally be attainable with some deviations.
  - b. It is a currently attainable standard because it demands perfect implementation.
  - c. It is a theoretical standard because it assumes that all equipment is in order and employees work as expected.
  - d. It is a practical standard because it assumes all operating factors occur as expected.
31. The purpose of project budgeting is to identify, evaluate, and select beneficial projects that require
- a. large budgeted expenses on the income statement and the appropriate time frame is over the project's life cycle.
  - b. large budgeted expenses on the income statement and the appropriate time frame is the year being budgeted.
  - c. commitments of large sums of funds and the appropriate time frame is over the project's life cycle.
  - d. commitments of large sums of funds and the appropriate time frame is the year being budgeted.
32. The quantitative technique used to project the direct labor costs for full scale production of a product from the initial run of the product is
- a. learning curve analysis.
  - b. linear programming.
  - c. Monte Carlo simulation.
  - d. expected value analysis.

33. Knollwood Industries uses exponential smoothing to forecast collections of outstanding accounts receivable. The company's credit sales are relatively steady with little seasonal fluctuation and the use of exponential smoothing has proven to be 90% accurate. Collections last month were forecasted to be \$525,000, but actual collections were \$485,000. Using a smoothing constant of 0.25, Knollwood's collections for next month are projected to be
- a. \$535,000.
  - b. \$515,000.
  - c. \$472,000.
  - d. \$436,500.
34. One of the final steps in completing a master budget is the preparation of a pro forma cash flow statement. This statement is intended to help users of financial statements
- a. evaluate a firm's economic resources and obligations.
  - b. evaluate a firm's liquidity, solvency, and financial flexibility.
  - c. determine a firm's components of income from operations.
  - d. determine whether or not accounts receivable are collectible.
35. The cash budget must be prepared before the company can complete the
- a. capital expenditure budget.
  - b. forecasted income statement.
  - c. production budget.
  - d. forecasted balance sheet.

36. Historically, Fargo Freight Co. has had no significant bad debt experience with its customers. Cash sales have accounted for 10% of total sales and payments for credit sales have been received as follows.

40% of credit sales in the month of the sale.  
30% of credit sales in the first subsequent month.  
25% of credit sales in the second subsequent month.  
5% of credit sales in the third subsequent month.

The forecast for both cash and credit sales is as follows.

<u>Month</u>	<u>Sales</u>
January	\$95,000
February	65,000
March	70,000
April	80,000
May	85,000

What is the forecasted cash inflow for Fargo Freight for the month of May?

- a. \$70,875.
  - b. \$78,750.
  - c. \$79,375.
  - d. \$83,850.
37. When preparing the annual budget, which one of the following is an acceptable method of allocating production line workers' fringe benefits?
- a. 100% allocation to manufacturing overhead.
  - b. 100% allocation to administrative expenses.
  - c. Prorata allocation between manufacturing overhead and administrative expenses.
  - d. Prorata allocation between nonoperating expenses and administrative expenses.

38. Golding Company has used the following data to prepare a pro forma income statement for the first quarter of next year. The company's effective income tax rate is 40%. The company's targeted gross margin percentage is 50%.

Sales	\$4,678,500
Beginning finished goods inventory	12,600
Ending finished goods inventory	18,900
Selling and administrative expenses	1,250,760
Cost of goods manufactured	2,445,790

Which one of the following is the **best** course of action?

- a. Since the pro forma gross margin percentage is lower than 50%, management should plan to lower the company's tax rate to improve next quarter's results.
  - b. Since the pro forma gross margin percentage is higher than 50%, management should plan to follow the master budget to achieve the targeted results.
  - c. Since the pro forma gross margin percentage is lower than 50%, management should plan to decrease manufacturing costs next quarter.
  - d. Since the pro forma gross margin percentage is higher than 50%, management should plan to increase the sales price next quarter.
39. Reaction Inc. has prepared budgets for the next five months: May, June, July, August and September. As soon as May results are reported, Reaction will add October to their budget plans. What type of budget system is Reaction using?
- a. Continuous budgeting.
  - b. Activity-based budgeting.
  - c. Flexible budgeting.
  - d. Project budgeting.

40. Warner Company is creating its pro forma balance sheet for next year. Warner anticipates that 50% of sales will be collected during the month of sale, 40% will be collected in the month following the sale, and 10% will be collected two months after the sale. If Warner's budgeted sales for the months of October, November, and December of the upcoming year are \$200,000, \$350,000, and \$450,000, respectively, Warner's budgeted year-end accounts receivable balance is
- \$260,000.
  - \$285,000.
  - \$299,000.
  - \$385,000.
41. Worley Inc, a publicly-traded company, operates a seasonal business with high production in the month of November for which suppliers are paid in December in order to take advantage of a purchase discount. High sales typically occur in December with payment received by Worley in January. Worley's abbreviated December cash budget is shown below.

Cash balance, beginning	\$875,000
Cash receipts	200,000
Cash disbursements	
Payments to suppliers	520,000
Other operating costs	500,000
Dividends	<u>80,000</u>
Cash balance, ending	<u>(\$ 25,000)</u>

The company is considering alternatives to provide the company with the desired ending cash balance of \$75,000 in December. The **best** action(s) for Worley would be to

- eliminate \$80,000 of dividends and postpone \$20,000 of payments to suppliers.
  - eliminate \$80,000 of dividends and arrange for \$20,000 of short-term borrowing.
  - postpone \$100,000 of payments to suppliers.
  - arrange for \$100,000 of short-term borrowing.
42. An organization's revenues and variable costs vary significantly with seasonal weather conditions. This variability has frustrated management's attempts to evaluate the organization's actual results against budgeted performance because there are often large variances in revenues. Which one of the following budgeting methods is **most** likely to assist management in planning and assessment of results?
- Zero-based budgeting.
  - Continuous budgeting.
  - Flexible budgeting.
  - Project budgeting.

43. Which one of the following is **not** a characteristic of a successful budget process?
- a. Setting specific expectations to compare to actual results.
  - b. Gaining top management support.
  - c. Using market feedback to assist in setting expectations.
  - d. Implementing the budget as the only benchmark for performance evaluation.
44. A company's annual budget provides information that can impact the company's
- a. long-term planning, only.
  - b. long-term planning and operational budgets, only.
  - c. operational budgets and strategy, only.
  - d. long-term planning, operational budgets, and strategy.
45. International Corporation uses a standard costing system and allocates variable overhead costs based on direct labor hours. The annual budget projected 1,000 finished units, 10,000 hours of direct labor and \$100,000 of variable overhead costs. At the end of the year 750 units were completed using 8,000 hours of direct labor and \$75,000 in variable overhead. What is the variable overhead spending variance?
- a. \$0.
  - b. \$5,000 favorable.
  - c. \$5,000 unfavorable.
  - d. \$25,000 favorable.

46. Which one of the following statements **best** describes the definition of critical success factors?
- a. Financial measures that track a company's competitive performance.
  - b. Financial and non-financial aspects of performance that are essential to have a competitive advantage.
  - c. The key non-financial performance indicators on a balanced scorecard.
  - d. The aspects of a business that are focused on measuring key costs.
47. Within a performance monitoring system, which of the following is the **least** valid reason for calculating variances between actual performance and budgeted performance?
- a. Allowing managers to take early corrective action.
  - b. Identifying the manager who is responsible for not achieving desired results.
  - c. Identifying efficient practices that can be transferred to other areas of the company.
  - d. Improving future performance forecasts.
48. A manager who is accountable for both income statement and balance sheet items is responsible for a(n)
- a. cost center.
  - b. investment center.
  - c. profit center.
  - d. revenue center.



49. The budget for one of Simpson Company's products is as follows.

Sales	\$10,000,000
Materials and labor	4,000,000
Fixed manufacturing overhead	1,500,000
Sales commissions	500,000
Advertising (fixed)	200,000
Other marketing costs (fixed)	800,000
Allocated administrative costs	<u>2,000,000</u>
Income	<u>\$ 1,000,000</u>

The budgeted contribution margin for this product is

- a. \$5,500,000.
  - b. \$5,300,000.
  - c. \$4,500,000.
  - d. \$3,000,000.
50. If a company allocates common costs by weighting the costs of each user as a separate entity, it is using which one of the following cost allocation methods?
- a. Incremental.
  - b. Reciprocal.
  - c. Stand-alone.
  - d. Step-down.

51. Hill Stand Company is currently performing a cost of quality analysis of its Memphis facilities. The following are costs compiled by the facility accountant.

Inspection	\$1,500
Warranty repair	2,800
Testing of new materials	400
Product testing	950
Abnormal spoilage	645
Scrap	150
Preventive equipment maintenance	590
Liability claims	1,870
Rework	1,285

Hill Stand's total internal failure cost is

- a. \$2,080.
  - b. \$2,785.
  - c. \$4,945.
  - d. \$5,955.
52. Which one of the following is a variance that could appear if a company uses a normal costing system?
- a. Direct material price variance.
  - b. Direct labor efficiency variance.
  - c. Variable overhead spending variance.
  - d. Variable overhead efficiency variance.

53. Columbia Company produces two products that are serviced by two support areas. Columbia uses the reciprocal method to allocate support area costs to the products with information as follows.

	<u>Support Area 1</u>	<u>Support Area 2</u>	<u>Product 1</u>	<u>Product 2</u>
Allocation base	Hours used	Square feet		
Area 1 hours used		5,000	120,000	75,000
Space occupied	3,000		40,000	20,000
Direct costs	\$350,000	\$200,000		

What additional information does Columbia need in order to complete the cost allocation?

- Direct costs of Products 1 and 2.
- Hours used by Support Area 1 and the space occupied by Support Area 2.
- Order in which the support areas will be allocated.
- No additional information is needed.

54. Navy Parks produced two new products last year. Sales and cost data for the two products is summarized below.

	<u>BM2</u>	<u>SM4</u>
Sales price per unit	\$ 100	\$120
Quantity sold	1,500	970
Costs:		
R&D	\$20,000	\$28,000
Marketing	7,000	10,000
Direct materials	46,000	42,000
Direct labor	35,500	25,000
Manufacturing overhead	12,000	9,500
Warranties	4,000	5,500

Manager A measures product performance using traditional absorption costing. Manager B uses life-cycle costing for performance measurement. Which one of the following correctly describes how the managers will evaluate the new products?

- a. Manager B finds SM4 is not profitable.
  - b. Manager A finds SM4 to be more profitable than BM2.
  - c. Both managers conclude that BM2 and SM4 are profitable products.
  - d. Manager B finds both BM2 and SM4 to be unprofitable products.
55. Which one of the following statements is the **best** example of inherent risk?
- a. The risk that the auditor did not detect a material misstatement in the financial statements.
  - b. The risk that a material misstatement could occur and will not be prevented.
  - c. The risk that the auditor failed to modify his opinion on materially misstated information.
  - d. The risk that there will be a material misstatement, assuming no related internal control strategy.

56. Which one of the following statements **best** describes the objective of an operational audit?
- a. To assess conformance with laws and regulations.
  - b. To analyze the reported financial activity of an entity.
  - c. To determine if the financial statements are fairly represented.
  - d. To appraise the efficiency and effectiveness of a process.
57. Which one of the following best represents an example of information that internal auditors should report to the Board of Directors?
- a. The decisions regarding actions that management should take to correct internal control deficiencies.
  - b. Items that could adversely affect the organization.
  - c. All audit findings that have been corrected.
  - d. The cost of correcting the significant audit issues.
58. When determining which controls to audit, an internal auditor should focus primarily on the relevance of those controls to the
- a. operating procedures of the company.
  - b. audit objectives that have been identified.
  - c. operating objectives of the company.
  - d. controls identified by the external auditor.
59. An internet gaming company uses many laptops in their office and needs to ensure that they are adequately safeguarded. Which one of the following **best** represents a control that the company should use for their laptops?
- a. Bolt the laptops in place or attach them with strong adhesives.
  - b. Keep a copy of all relevant details on the hard drive of the laptops.
  - c. Be able to identify the model and serial number for the laptops.
  - d. Ensure that any virus programs have been identified on the laptops.
60. Which one of the following characteristics related to management's philosophy and operating style **best** indicates management's commitment to strong internal controls?
- a. Decisions are controlled by a small group of top-level executives.
  - b. Attitudes toward financial reporting are very aggressive.
  - c. Funds are allocated annually to update and improve the entity's information systems.
  - d. Strong emphasis is placed on meeting earnings projections.

61. In order to achieve independence, the internal audit function should
- a. consist solely of external auditors from the same firm as the company's independent accountants.
  - b. consist solely of external auditors from a firm different from the company's independent accountants.
  - c. report to the audit committee of the Board of Directors or others charged with governance.
  - d. report to the engagement partner of the company's independent accountant.
62. Oakhurst manufactures goods the month before they are sold and uses a 3-month moving average to predict sales. Sales for the first four months of the year are shown below.

January	42,000 units
February	39,000 units
March	43,000 units
April	50,000 units

In May, how many units would Oakhurst expect to manufacture for June sales?

- a. 41,333 units.
- b. 44,000 units.
- c. 45,667 units.
- d. 50,000 units.

63. Which of the following overhead variances would be helpful in bringing attention to a potential short-term problem in the control of overhead costs?

	Spending Variance	Volume Variance
a.	Yes	Yes
b.	Yes	No
c.	No	Yes
d.	No	No

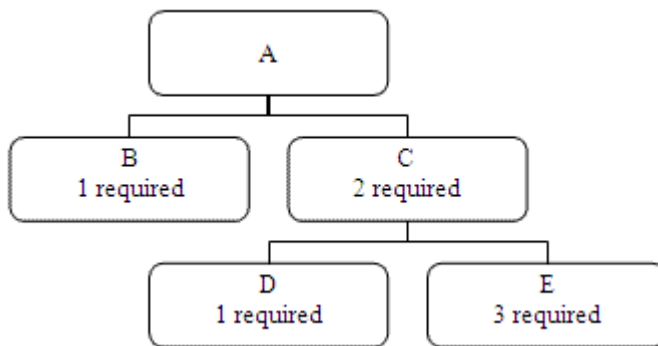
64. A company uses return on investment (ROI) to evaluate year-end divisional performance. Which one of the following inventory practices would **most** reduce comparability among two similar divisions?

- a. One division uses a perpetual inventory system and the other division uses a periodic inventory system.
- b. One division uses the net method to record purchases and the other division uses the gross method to record purchases.
- c. One division uses LIFO and the other division uses FIFO.
- d. One division places goods for sale on consignment and the other division does not.

65. A large company is in the process of allocating service department costs to revenue-generating departments. Under which one of the following allocation methods will the amount allocated to each revenue-generating department be different if the order in which service department costs are allocated is different?

- a. Step-down method.
- b. Direct method.
- c. Reciprocal method.
- d. Activity-based method.

66. The following MRP (Material Requirements Planning) diagram describes the assembly of Finished Good A.



The current inventory levels are shown below.

A: 0      B: 50      C: 60      D: 100      E: 120

If the company has just received an order for 500 units of A, how many units of E must the company purchase?

- a. 3,000.
  - b. 2,880.
  - c. 2,820.
  - d. 2,700.
67. A company uses a process cost system in accounting for its single product. The cost of units failing final inspection, termed normal spoilage, is added to the inventory cost of the good units produced. Units spoiled during production are termed abnormal spoilage, and their cost is immediately written off to cost of goods sold. During the previous month, the entire inventory of spoiled units (both normal and abnormal spoilage) was sold at a price lower than it had cost to produce them. How would this sale affect the reported net income of the company?
- a. Increase net income from the sale of the abnormal spoilage and increase net income from the sale of the normal spoilage.
  - b. Increase net income from the sale of the abnormal spoilage and decrease net income from the sale of the normal spoilage.
  - c. Decrease net income from the sale of the abnormal spoilage and increase net income from the sale of the normal spoilage.
  - d. Decrease net income from the sale of the abnormal spoilage and decrease net income from the sale of the normal spoilage.



68. A company's IT manager has been asked to ensure that the company's data is protected in the event it was intercepted during transmission. Which one of the following is the **best** control to implement from the selection below?
- a. Sequencing of messages.
  - b. Encryption.
  - c. Self-checking algorithms.
  - d. Dedicated lines.
69. A payroll accountant for a company checked the most recent payroll records, and discovered that they had accidentally paid an employee for 400 hours instead of 40 hours. Which one of the controls below would be the **best** control to prevent an error such as this one?
- a. A processing control that highlighted the unusually high amount.
  - b. A transaction control that would create an error report.
  - c. An input control that looked for unreasonable amounts.
  - d. An output control that would not print a check over a certain amount.
70. An accountant has frequent business contacts with customers, suppliers and creditors in the course of performing professional duties. Which of the following circumstances would **most** likely threaten the accountant's adherence to the ethical principles and standards of IMA's Statement of Ethical Professional Practice?
- a. The accountant accepted two World Cup tickets from a supplier and flew to the stadium in the company's jet along with a number of the supplier's executives.
  - b. The accountant speaks quarterly with analysts regarding the company's past performance and future prospects.
  - c. The accountant attends a professional conference where the accountant goes out to dinner and socializes with accountants from other companies in the industry.
  - d. The accountant attends a charity event at the invitation of the company's audit firm which bought two tables of tickets to support the event.

71. Which one of the following is an advantage of using the budgeting process to judge performance?
- a. Management is able to measure actual performance against predicted performance.
  - b. Past performance can be used to evaluate performance improvements.
  - c. Management believes that past conditions are an indicator of future conditions.
  - d. Company performance can be measured against the performance of others in the same industry.
72. Sully Inc. manufactures wall clocks. Sully sells each clock for \$30. Variable manufacturing expense for each clock is \$18. Sully plans to sell 400 clocks this month and anticipates incurring \$2,600 of fixed expenses. What will be Sully's total contribution margin this month?
- a. \$2,200.
  - b. \$4,800.
  - c. \$7,200.
  - d. \$12,000.
73. Which one of the following statements best describes budgetary slack?
- a. The practice of management assigning relaxed budgetary goals after the company achieves the first several months of the annual budget.
  - b. The total amount that actual expenses are below budgeted expenses and actual revenues exceed budgeted revenues.
  - c. The practice of understating budgeted revenues or overestimating budgeted costs to make budgeted targets more achievable.
  - d. The margin of error assigned to each cost center to encourage the manager to budget accurately and consistently.

74. The finance department of a large company has prepared a master budget with very limited expense budgets for each department. The department managers are worried about being held accountable for these assigned targets, but senior management wants to keep spending reduced to allow for contingencies and strategic adjustments to the company-wide master budget. Based on this information, this budget process is
- a. a successful budgeting process, because it will be a very useful tool to hold people accountable for overspending.
  - b. a successful budgeting process, because it will encourage the associates to work their hardest to meet the goals.
  - c. not a successful budgeting process, because management has left too much room for strategic unknowns.
  - d. not a successful budgeting process, because it has not been widely accepted by the employees.
75. A company uses return on investment (ROI) to measure the performance of its business units. The company manufactures and distributes consumer goods. Last year management identified a possible shortage of raw materials. To mitigate this risk a large amount of raw material was bought in advance and stored in the manufacturing plant inventory. As a result of this decision ROI will
- a. increase.
  - b. decrease.
  - c. not change.
  - d. have an unpredictable change.
76. Teen Styles, a merchandising company, is considering a \$1,000,000 upgrade to its retail and warehousing facilities that will allow the company to handle more products and attract more customers. Teen Styles anticipates that sales will increase by \$500,000, and operating income will increase by \$200,000 per year. If Teen Styles has a minimum required return on investment of 15%, what would be the residual income resulting from the upgrade?
- a. \$800,000.
  - b. \$500,000.
  - c. \$75,000.
  - d. \$50,000.

77. A single-product company uses regression to predict one of its factory overhead costs with materials used as the independent variable. The regression equation is:  $Y = 542,000 + 0.0000253X$ . Based on  $R^2$ , management has determined that this model captures a significant portion of the relationship.

The behavior of this factory overhead cost with respect to units of finished goods produced is

- a. fixed.
  - b. semivariable.
  - c. variable.
  - d. not determinable from the provided information.
78. Crown Construction is a new home builder. The company offers its customers the choice of one of twelve home designs on lots located in several developing areas. During its 15-year existence, Crown created its annual budget by adjusting the prior year's actual results for changes in inflation as well as in projected volume. During this time, Crown's profit margins have been among the lowest of all of the local home builders. Ownership of Crown recently changed. New management believes there has been significant unnecessary spending in many areas of the company, although they do not know exactly where or to what extent overspending occurred. To improve profitability, the type of budgeting system Crown's new management should implement is
- a. activity-based budgeting.
  - b. continuous budgeting.
  - c. project budgeting.
  - d. zero-based budgeting.

79. Crossfield Furniture Outlet needs to expand its warehouse capacity and is concerned about how this project will impact the financial outlook. Crossfield will hire a contractor to perform the work. Because the company's margins are small and cash is always tight, Crossfield will need to use a bank loan to finance the project. The budget for this project, which is expected to take six months, should include the contractor's bid price plus which of the following?
- I. Interest expense on the bank loan.
  - II. Incremental insurance expense.
  - III. Incremental property tax expense.
- a. I only.
  - b. II only.
  - c. II and III only.
  - d. I, II, and III.
80. The Coffee Pot wants to use time series analysis to predict its erratic weekly sales. The company will choose from one of four methods with partial results shown below.

	<u>Week 1</u>	<u>Week 2</u>	<u>Week 3</u>	<u>Week 4</u>
Actual sales	\$2,500	\$2,200	\$1,800	\$2,100
Exponential smoothing forecast			\$2,080	\$1,912
Regression forecast			\$1,900	\$1,950
Two-week moving average forecast			\$2,350	\$2,000
Weighted-average forecast			\$2,260	\$1,880

The **best** forecasting method for The Coffee Pot to use is

- a. exponential smoothing.
- b. regression.
- c. two-week moving average.
- d. weighted-average.

81. Bolton Corporation manufactures goods that are sold by independent sales agents who receive a 20% payment based on sales value. Bolton's pro forma income statement for the upcoming year follows below.

Sales	\$15,000,000
Cost of goods sold (all variable)	6,000,000
Payment to sales agents	3,000,000
Other expenses (all fixed)	<u>2,000,000</u>
Operating income	<u>\$ 4,000,000</u>

After the budget was created, Bolton became aware that its primary competitors would each be raising their selling prices by 5%. If Bolton also increased its selling price by 5%, the company's revised operating income would be

- a. \$4,750,000.
  - b. \$4,600,000.
  - c. \$4,300,000.
  - d. \$4,200,000.
82. Garret Corporation has decided to implement a balanced scorecard evaluation system and is considering several measurements factors.

Customer returns  
Number of employees  
Manufacturing throughput time  
Number of manufacturing plants  
Return on investment  
Training hours

Which of the following are **most** likely non-financial factors to be used in a balanced scorecard?

- a. Customer returns, manufacturing throughput time, return on investment.
- b. Number of employees, number of manufacturing plants, training hours.
- c. Customer returns, manufacturing throughput time, training hours.
- d. Customer returns, number of employees, number of manufacturing plants.

83. Cogwin Inc. operates under a decentralized structure. Cogwin's Western Division plans to purchase a needed component from the Eastern Division that is operating at capacity. Eastern incurs relevant costs of \$4 to manufacture the component and \$1 to ship each unit, and they can sell the unit externally at a price of \$8 per unit. The Western Division incurs costs of \$9 per unit and sells the finished goods for \$18 each. According to the general guideline for transfer-pricing situations, the minimum transfer price per unit should be
- the Eastern Division's manufacturing cost of \$4.
  - the Eastern Division's manufacturing and shipping costs of \$5.
  - \$7 to equally divide profits between the two divisions.
  - the external selling price of \$8.
84. Pierre Enterprises, a company that manufactures a product using scarce and costly materials, utilizes management by exception. Pierre's flexible budget indicated \$2,000,000 of material costs, \$3,000,000 of direct labor, and \$5,000,000 of manufacturing overhead to support \$20,000,000 of sales. Under this system, which one of the following variances would **not** be further investigated?
- A \$400,000 unfavorable production volume variance.
  - A \$70,000 unfavorable material quantity variance.
  - A \$370,000 favorable labor efficiency variance.
  - A \$2,000,000 unfavorable sales quantity variance.
85. A company has four customers. Details on revenues and expenses are presented below.

	<u>Customer A</u>	<u>Customer B</u>	<u>Customer C</u>	<u>Customer D</u>
Units sold	10,000	20,000	35,000	50,000
Sales	\$100,000	\$150,000	\$200,000	\$250,000
Cost of goods sold	50,000	60,000	70,000	75,000
Delivery costs	10,000	25,000	30,000	50,000
Administration	30,000	30,000	30,000	30,000
Depreciation	20,000	20,000	20,000	20,000
Utilities	<u>10,000</u>	<u>10,000</u>	<u>10,000</u>	<u>10,000</u>
Profit	<u>\$ (20,000)</u>	<u>\$ 5,000</u>	<u>\$ 40,000</u>	<u>\$ 65,000</u>

Which customer has the **lowest** customer level operating profit per unit sold?

- Customer A.
- Customer B.
- Customer C.
- Customer D.

86. The financial results for the four regional divisions of Mattress Corporation are shown below.

	<u>North</u>	<u>South</u>	<u>East</u>	<u>West</u>
Net profit	\$1,000	\$5,000	\$4,000	\$7,500
Assets	\$2,500	\$15,000	\$8,000	\$25,000
Liabilities	\$500	\$7,000	\$1,000	\$5,000
Total equity	\$2,000	\$8,000	\$7,000	\$20,000

Which division has the **lowest** return on investment?

- a. North.
  - b. South.
  - c. East.
  - d. West.
87. A corporation has set a goal to increase its return on investment (ROI). To facilitate this goal the corporation has set up an incentive program that rewards each division for increasing their ROI. One possible downfall of this incentive program is that it will
- a. cause division managers to compete for the corporation's investment funds.
  - b. cause the corporation to select high-risk investments.
  - c. cause the corporation to pay out incentives if goals are achieved.
  - d. result in managers rejecting profitable projects.



88. Waggoner Company produces a product that contains 9 ounces of materials in each unit of finished goods. During the production process, 4% of the materials evaporate. Waggoner pays its suppliers \$2 per ounce; the cost to ship the material to the company averages \$0.20 per ounce. The standard dollar amount of raw materials contained in one unit of finished goods is
- a. \$18.75.
  - b. \$19.80.
  - c. \$20.59.
  - d. \$20.63.
89. Which of the following statements are **true** with respect to continuous improvement?
- I. Improvements should be made continuously until the goal is reached.
  - II. The continuous improvement should involve management and workers.
  - III. Standards should be evaluated regularly and improvements should be on-going.
  - IV. Continuous improvement initiatives should involve primarily the workers.
- a. I and II only.
  - b. I and IV only.
  - c. II and III only.
  - d. III and IV only.
90. Which one of the following is a value-added activity for a company that manufactures bicycles?
- a. Moving a tire to the rework area.
  - b. Placing a reworked brake on a bicycle.
  - c. Reworking a bicycle for the second time.
  - d. Inspecting a reworked bicycle.

91. Providence Company's practical capacity is 80% of its theoretical capacity. The company writes off any variances to the cost of goods sold at the end of the year. If Providence uses theoretical capacity to calculate its budgeted fixed manufacturing cost, as compared with using practical capacity, the company's
- a. budgeted fixed overhead will be higher.
  - b. selling price will be lower.
  - c. income will be higher.
  - d. assets will be lower.
92. Ed Lassiter is the accounting manager that oversees the payment process. The external auditor has been examining the operation for efficiency and control. The auditor has asked Lassiter to provide documentation of the process to see how the payments move through the process. Which of the following statements represents the **best** documentation that Lassiter could provide?
- a. A matrix analysis because it allows the auditor to see the operation and identify missing steps.
  - b. A flowchart because it allows the auditor to see the operation and identify missing steps.
  - c. A matrix analysis because it shows risks and controls to ensure that all risks are covered.
  - d. A flowchart because it shows risks and controls to ensure that all risks are covered.
93. Grocery Co. has had to pull their backup files from an off-site location and restore them due to a flood that destroyed their on-site data. They pulled the file with an external label for the most recent backup. Instead, they find that the backup is a blank tape and they are unable to locate the proper tape. Which controls can Grocery Co. implement so that they will be able to find the correct data in the future?
- a. Additional external labeling containing further file details.
  - b. File structure that includes duplication of critical fields.
  - c. Tape management systems such as the grandfather/father/son concept.
  - d. Storage of the file and its backup together in a secure place.

94. Friendly Skies Airline is about to create an internet site to capture the flight reservations and ticket payments. Which one of the following **best** demonstrates the inherent risks of the internet?
- a. Dependency on internet service provider.
  - b. Confidential information can be intercepted.
  - c. Data formats are not typically standardized.
  - d. The limited controls available to mitigate risks.

Answers - CMA Part 1 Practice Questions

- |       |       |       |
|-------|-------|-------|
| 1. b  | 35. d | 69. c |
| 2. c  | 36. c | 70. a |
| 3. a  | 37. a | 71. a |
| 4. b  | 38. c | 72. b |
| 5. d  | 39. a | 73. c |
| 6. b  | 40. a | 74. d |
| 7. a  | 41. d | 75. b |
| 8. b  | 42. c | 76. d |
| 9. d  | 43. d | 77. a |
| 10. d | 44. d | 78. d |
| 11. d | 45. b | 79. d |
| 12. a | 46. b | 80. b |
| 13. d | 47. b | 81. b |
| 14. a | 48. b | 82. c |
| 15. c | 49. a | 83. d |
| 16. d | 50. c | 84. a |
| 17. c | 51. a | 85. d |
| 18. a | 52. c | 86. d |
| 19. c | 53. d | 87. d |
| 20. d | 54. a | 88. d |
| 21. d | 55. d | 89. c |
| 22. b | 56. d | 90. b |
| 23. b | 57. b | 91. d |
| 24. a | 58. b | 92. b |
| 25. a | 59. c | 93. c |
| 26. c | 60. c | 94. b |
| 27. c | 61. c |       |
| 28. a | 62. c |       |
| 29. c | 63. b |       |
| 30. c | 64. c |       |
| 31. c | 65. a |       |
| 32. a | 66. d |       |
| 33. b | 67. a |       |
| 34. b | 68. b |       |



*IMA's Certification for  
Accountants and  
Financial Professionals  
in Business*

CMA Part 1- Financial Planning, Performance and Control  
Examination Practice Questions

**Part 1 – Financial Planning, Performance and Control**  
**Examination Practice Questions**

1. SleepTight, a nationwide retail mattress firm, will begin selling high-end crib mattresses next year. Management believes sales for this product will be driven primarily by birth rates but will be influenced to a lesser extent by income levels. The **best** method for SleepTight to use to predict next year's sales is
- simple regression.
  - time-series regression.
  - multiple regression.
  - maximum likelihood regression.
2. True Form Toys is in the process of preparing budgets for the upcoming period. True Form manufactures wooden toy trucks. Sales vary significantly, peaking in the holiday season. Management wishes to maintain an ending inventory equal to 20% of the next month's sales. Following is True Form Toy's anticipated sales for the upcoming period.
- |          |                  |
|----------|------------------|
| October  | 2,000 toy trucks |
| November | 2,500 toy trucks |
| December | 8,500 toy trucks |
| January  | 1,200 toy trucks |
| February | 850 toy trucks   |
- How many trucks should True Form Toys manufacture in November?
- 1,300.
  - 1,700.
  - 3,700.
  - 4,200.
3. Jay Company uses a standard cost system. During the past year, the variances from standard were significant. Jay is considering whether to allocate the variances among the appropriate inventory accounts and cost of goods sold, or to allocate all of the variances directly to cost of goods sold. Under which one of the following situations would reported net income be largest?
- All of the variances are favorable and are written off directly to cost of goods sold.
  - All of the variances are unfavorable and are written off directly to cost of goods sold.
  - All of the variances are favorable and are allocated among cost of goods sold and ending inventory accounts.
  - All of the variances are unfavorable and are allocated among cost of goods sold and ending inventory accounts.

4. Trinity Corporation reported the following standard-to-actual cost information.

	<u>Actual Costs</u>	<u>Total Variance</u>
Direct Materials	\$19,250	\$900 Favorable
Direct Labor	\$17,600	\$800 Unfavorable

Which one of the following **best** explains both of Trinity's variances?

- a. Change in the collective bargaining agreement resulting in higher hourly wage rates.
  - b. Learning curve resulted in more efficient production.
  - c. Lower quality, lower cost materials resulted in higher than expected re-work costs.
  - d. Unexpected increase in electricity costs.
5. Based on the following information and a required rate of return of 12%, which location has the best residual income?

	<u>Operating Income</u>	<u>Investment</u>	<u>Intangibles</u>	<u>Depreciation</u>
Madison	\$300,000	\$1,000,000	\$200,000	\$120,000
Denver	\$490,000	\$2,750,000	\$600,000	\$270,000

- a. Denver at \$160,000.
  - b. Madison at \$180,000.
  - c. Madison at \$204,000.
  - d. Denver at \$232,000.
6. Which one of the following is the **least** likely reason that variances are computed within a performance monitoring system?
- a. To trigger organization learning.
  - b. To make continuous improvements.
  - c. To verify the accuracy of standards.
  - d. To alert management to existing problems.
7. The primary difference between absorption and variable costing is that variable costing treats
- a. only direct materials and direct labor as product cost.
  - b. direct materials, direct labor, the variable portion of manufacturing overhead, and an allocated portion of fixed manufacturing overhead as product costs.
  - c. only direct materials, direct labor, the variable portion of manufacturing overhead, and the variable portion of selling and administrative expenses as product cost.
  - d. only direct materials, direct labor, and the variable portion of manufacturing overhead as product costs.

8. Electronics Inc. manufactures an increasing variety of consumer communications devices. The company has always used a traditional cost allocation system, but now the accounting staff has proposed a change to an activity-based costing system. The vice president of operations argues, "Costs are costs, rearranging them won't save any money and those systems are complicated and expensive." The **most** logical response to this argument is that activity-based costing systems
- provide more accurate reporting of each product's cost so that management can make more informed pricing decisions.
  - are less expensive to use than traditional cost systems.
  - eliminate the use of arbitrary cost allocations that are used in traditional cost systems.
  - focus on manufacturing activities and eliminate engineering, marketing and other non-traceable activities from costing considerations.
9. Which one of the following is **not** a benefit of activity-based management?
- Improved competitive advantage by using continuous improvement methods.
  - Improving the value the customer receives.
  - Better allocation of resources to key value-added activities.
  - Better costing information.
10. Isaac Toy Company management would like to determine profitability of its Alpha Doll product line. To eliminate the possibility of profit distortion due to changes in production, the managers should primarily review
- variable (direct) costing income statements.
  - absorption costing income statements.
  - multi-step income statements.
  - cash flow statements.
11. At NC Corporation year-end bonuses at each branch office are based on branch profitability. Due to a slow economy, profitability through the third quarter at the Northeast branch is under budget. To address this issue the accounting staff at the Northeast branch develops a list of end-of-year actions designed to boost earnings for the year. Which one of the following is **most** likely to violate IMA's Statement of Ethical Professional Practice?
- Requesting the branch's advertising agency to delay billing third quarter advertisements until January.
  - Deferring advertising expense by reducing the number of newspaper advertisements run in the third quarter.
  - Deferring planned painting and refurbishment of the warehouse until the following year.
  - Offering additional discounts to customers to entice them to increase purchases in the third quarter.



12. Calculate the exponential smoothing forecast for week 3 using a smoothing constant of 0.2. The forecast for week 1 is 32. The time series data follows.

<u>Week</u>	<u>Sales</u>
1	32
2	36

- a. 32.00.
  - b. 32.80.
  - c. 25.60.
  - d. 38.40.
13. Which one of the following **best** describes the capital budget?
- a. It ensures that there are sufficient funds available for the operating needs of the company.
  - b. It sets the long-range goals of the company including consideration of all available resources.
  - c. It results in the cash requirements during the operating cycle.
  - d. It assesses the long-term needs of the company for plant and equipment purchases.
14. A company experiences a cumulative learning curve of 75% on the manufacturing of a particular electrical product. It takes 100 hours to make the first 500 units. How many hours will it take to make 2,000 units in total?
- a. 225.00.
  - b. 231.25.
  - c. 250.00.
  - d. 300.00.
15. Herrington Industries is able to sell up to 50,000 units of product X each month. Engineers are currently in the process of studying labor movement to determine the labor hours standard for product X. Engineers have found that the fastest workers who take no breaks can complete a unit of product X within 30 minutes. The average worker can complete one unit of product X within 45 minutes, including time for company mandated breaks. For Herrington, 0.75 hours per unit is known as the
- a. theoretical standard.
  - b. average standard.
  - c. practical standard.
  - d. variance standard.

16. Goode Theaters outsources the cleaning of its movie theaters. The cleaning vendor's charges are based upon the total hours needed to clean the facilities, and more cleaning time is needed as more people attend the theater. Goode has accumulated the following historical data.

<u>Month</u>	<u>Cleaning Cost</u>	<u>Number of Movie Tickets Sold</u>
April	\$11,000	19,700
May	9,000	17,000
June	15,600	28,000
July	15,000	29,000

Goode anticipates selling 25,000 movie tickets in August. If Goode uses the high-low method of separating costs into their fixed and variable components, the company's budget for August cleaning costs would be

- a. \$13,000.
  - b. \$13,400.
  - c. \$13,500.
  - d. \$13,800.
17. Brown Veterinary Clinic schedules weekend staff based on the number of animals being boarded. The clinic has a total of four staff available to work on weekends. Based on state regulations, the clinic is required to have one staff member on site for up to 10 animals. Two staff members are required for 11-23 animals, three staff for 24-36 animals and all four staff members must work if there are 37-45 animals being boarded. The clinic has experienced the following average number of animals in the past 12 weekends.

<u>Average number of animals</u>	<u>Number of weekends</u>
12	1
20	4
25	3
35	2
40	2

Using expected value analysis, how many staff members should the clinic schedule for each weekend during the upcoming month?

- a. 1.
- b. 2.
- c. 3.
- d. 4.

18. Gooding Bicycles has begun using budgeting to evaluate performance. Budgets were prepared for the current year based on anticipated sales of 40,000 units. Actual sales totaled 45,000. What type of budgeting methodology should Gooding use to evaluate performance this year?
- Zero-based budgeting.
  - Continuous budgeting.
  - Static budgeting.
  - Flexible budgeting.
19. Breakfast Anytime produces and sells eight different varieties of cereal. The company has eight marketing managers, each of whom is responsible for advertising one of the varieties. Historically, the company has budgeted advertising costs as 10% of each product's anticipated revenues, and actual advertising costs have been very close to budgeted amounts, yielding very insignificant variances. In order to provide for a more efficient allocation of resources available for its advertising, Breakfast Anytime should
- implement a balanced scorecard.
  - implement flexible budgeting.
  - implement zero-based budgeting.
  - maintain the current system.
20. Matsui Company's sales have demonstrated a similar pattern for several years. Quarterly sales data for the past two years (in millions) are shown below.

Year 1		Year 2	
Quarter 1	\$20.1	Quarter 1	\$23.8
Quarter 2	18.3	Quarter 2	19.5
Quarter 3	21.5	Quarter 3	25.2
Quarter 4	21.7	Quarter 4	25.8

The type(s) of pattern(s) indicated by Matsui's sales data could **best** be described as

- cyclical and seasonal.
- cyclical and trend.
- seasonal and trend.
- irregular.

21. O'Hara Corporation has the opportunity to purchase land adjacent to its existing location for \$200,000. If purchased, the company would also spend \$20,000 to level the property to make it usable for building construction. Management believes there is an 80% probability it will have enough cash to purchase the land outright and a 20% chance it will need to borrow the \$200,000. The dollar amount O'Hara should show on its initial capital budget for the purchase of this land is
- \$220,000.
  - \$200,000.
  - \$180,000.
  - \$160,000.
22. Tarleton Company operates several retail stores. To support the company's long-term goals, operating income should be at least 10% of sales. Tarleton's abbreviated pro forma income statement for next year is shown below.

Revenues	\$7,500,000
Cost of goods sold	3,750,000
Operating fixed costs	<u>3,125,000</u>
Operating income	<u>\$ 625,000</u>

The **best** action for Tarleton to take in order to meet its income goal is to

- increase the advertising budget by \$25,000 which would increase sales units by 5%.
  - raise the selling price by 2% which would reduce sales units by 2% but save \$50,000 in operating costs.
  - require all managers to reduce their budgeted operating fixed costs by 3%.
  - wait until the end of next year's first quarter to re-evaluate its situation.
23. Kennedy Corporation's annual budget shows expected inventory purchases of \$55,000,000 from its suppliers. Selected financial information from Kennedy's pro forma beginning and ending balance sheets are as shown below.

	<u>January 1</u>	<u>December 31</u>
Inventory	\$6,000,000	\$7,500,000
Accounts payable	\$4,000,000	\$5,000,000

On Kennedy's pro forma Statement of Cash Flows, the dollar amount that would be shown for "Cash payments to suppliers" is

- \$56,000,000.
- \$55,500,000.
- \$54,500,000.
- \$54,000,000.

24. Louis Diamonds manufactures diamond earrings and pendants. The company uses activity-based budgeting and has established diamond inspection as one of its cost pools with number of diamonds used as its cost driver. Inspection supplies for each diamond inspected are \$0.35. For the upcoming year, the company originally believed it would produce and sell 10,000 pendants containing one diamond and 5,000 sets of earrings containing two diamonds, resulting in the following inspection cost per diamond.

Salary of inspector	\$60,000
Equipment costs	3,000
Inspection supplies	<u>7,000</u>
Total	<u>\$70,000</u>
Cost per diamond	\$ 3.50

If the company now believes it will only be able to produce and sell 8,000 pendants, the inspection cost per set of earrings would be

- a. \$6.30.
  - b. \$7.00.
  - c. \$7.70.
  - d. \$7.78.
25. Bryan Corporation, a retailer, uses flexible budgeting as a planning tool. The company's original budget for the upcoming year is shown below.

Sales	\$90,000,000
Cost of goods sold	36,000,000
Administrative expenses (all fixed)	21,000,000
Advertising expense	9,000,000
Sales commissions	6,750,000
Other marketing expenses (all fixed)	<u>9,250,000</u>
Operating income	<u>\$ 8,000,000</u>

The manager of Bryan's Marketing Department believes sales volume will increase by 10% if the advertising budget is increased by \$5,000,000. Should Bryan approve the increased advertising request?

- a. Yes, because the increase in sales is \$4,000,000 greater than the increase in advertising costs.
- b. No, because advertising is 10% of sales so the maximum increase in sales would be \$900,000.
- c. Yes, because operating income would increase by \$400,000.
- d. No, because operating income would decrease by \$275,000.

26. All of the followings are advantages of the budgeting process **except** that the budget
- forces management to assess the future objectives of the company.
  - establishes benchmarks to identify unsatisfactory organizational performance.
  - facilitates communication among organizational units.
  - allocates resources on an as-needed basis.
27. A company manufactures a line of products that vary with complexity: a basic model, a standard model, and a deluxe model. The company uses 25 different activity cost drivers to assign overhead costs to its products. The deluxe model typically uses more cost drivers than the simpler models. The company encourages managers to focus on activities performed for each product and to control the cost of those activities. Which budget methodology would **best** meet this company's need?
- Traditional budgeting.
  - Zero-based budgeting.
  - Activity-based budgeting.
  - Flexible budgeting.
28. The Board of Directors is concerned that the budget committee has fallen into the practice of applying a flat 3% growth to the prior year performance, placing too much emphasis on the past and not focusing on the future opportunities and related activities required to achieve them. The Board would like the committee to take a different approach: evaluate the activities needed to meet the strategic goals of the company, and allocate resources accordingly, requiring management to justify each function and associated costs. Which budget methodology is the Board recommending?
- Traditional budgeting.
  - Activity-based budgeting.
  - Zero-based budgeting.
  - Continuous budgeting.
29. Which of the following statements apply to the continuous budget methodology?
- The current financial forecast reflects the most recent monthly results and any material changes to the company's outlook or economy.
  - Forecasts are updated every few months, reassessing the company's outlook several times a year.
  - The decision making process to develop the budget takes place during the fourth quarter of the prior year being budgeted.
- I and II only.
  - I and III only.
  - II and III only.
  - I, II, and III.

30. Which budget is prepared after the creation of the cash budget?
- Sales budget.
  - Capital expenditures budget.
  - Production budget.
  - Budgeted balance sheet.
31. Traditional budgeting methods look at historical data and current resources and then project forward. Activity-based budgeting is different in that
- it looks at desired outcomes and works back from there to determine resources needed.
  - it uses current levels of activity to determine future levels without regard to resources currently available.
  - being under budget in one year would not necessarily indicate that an operating unit would have its budget cut the following year.
  - the focus is on planning department by department based on resources available.
- I only.
  - I and III only.
  - II and III only.
  - II and IV only.
32. Taylor Incorporated prepares cash budgets each month, including a forecast of monthly cash collections. Collections are expected to be 65% in the month of sale, 25% in the first month following the sale, and 10% in the second month following the sale. Sales for the first six months of the year were as follows.

January	\$185,000	April	\$208,000
February	\$196,000	May	\$210,000
March	\$216,000	June	\$232,000

The total cash collected during the month of May is

- \$207,900.
- \$208,800.
- \$210,100.
- \$224,100.

33. Crescent Hills Retirement Home provides accommodations for up to 200 residents on its 4 acre retirement community. Crescent Hills manager Rita Avery was disappointed to see that last month's actual results were quite different than the budget for March. The retirement home charged \$2,000 per resident as planned. Expenses are categorized by the four departments that run the community home: Housekeeping, Maintenance, Dietary and Nursing. Avery is not sure what went wrong and is concerned she will need to lay off employees if this happens again in April. March's budget and actual results are shown below.

	<u>March Budget</u>
Revenue (\$2,000 per resident × 180 residents)	\$360,000
Less expenses:	
Housekeeping (\$65,000 plus \$15 per resident)	67,700
Maintenance (\$30,000 plus \$23 per resident)	34,140
Dietary (\$40,000 plus \$180 per resident)	72,400
Nursing (\$85,000 plus \$300 per resident)	<u>139,000</u>
Operating income	<u>\$46,760</u>

	<u>March Actual Results</u>
Revenue	\$400,000
Less expenses:	
Housekeeping	97,800
Maintenance	59,200
Dietary	75,800
Nursing	<u>144,900</u>
Operating income	<u>\$22,300</u>

Using flexible budgeting, which one of the following statements is correct?

- All four departments have an unfavorable variance.
  - Nursing is the department with the highest unfavorable variance.
  - The revenue variance is favorable.
  - Housekeeping and Maintenance departments have unfavorable variances.
34. Advantages of the full-cost method for determining transfer prices include all of the following **except** that it
- leads to goal congruence among departments.
  - leads to better external pricing based on cost behaviors.
  - is the least costly method to administer.
  - represents relevant costs for long-run decisions.



35. Waterfall Industries is located in Kansas and has four branch offices throughout the state. Following are the operating results from last year.

	<u>Kansas City</u>	<u>Garden City</u>	<u>Wichita</u>	<u>Salina</u>
Branch office sales	\$300,000	\$420,000	\$540,000	\$606,000
Branch office profit	120,000	294,000	318,000	104,000
Average total assets	805,000	914,000	1,650,000	745,000

Waterfall has plans to invest \$1,000,000 in one of the branch offices. The new investment is estimated to earn sales of \$350,000 and generate a profit of \$210,000 for the branch.

Waterfall Industries' targeted rate of return is 18%.

Which branch had the highest return on investment?

- a. Kansas City.
  - b. Garden City.
  - c. Wichita.
  - d. Salina.
36. A cosmetics company is expanding its marketing presence by placing stores within a national department store chain. The cosmetics company hires its own store managers who are responsible for generating sales. The company pays rent per square foot to the department store. For the purpose of assessing the managers' performance, each cosmetics store would **most** appropriately be considered a(n)
- a. cost center.
  - b. revenue center.
  - c. profit center.
  - d. investment center.
37. Cogwin Corporation, a manufacturer of value-priced clothing, measures the performance of its divisions based upon return on investment. If investment is defined as the book value of all assets recorded on a division's balance sheet, Cogwin will have the **most** difficulty in comparing divisions that vary significantly in
- a. age.
  - b. geographic location.
  - c. managerial style.
  - d. sales volume.

38. A company has three product lines: basic, deluxe, and limited. Total fixed costs are allocated based on direct labor hours and remain unchanged in the short-term.

	<u>Basic</u>	<u>Deluxe</u>	<u>Limited</u>
Units sold	10,000	7,000	2,500
Price per unit	\$10	\$13	\$21
Total variable costs	80,000	70,000	37,500
Total fixed costs	22,000	13,000	6,000

Based on the information above, which product line(s), if any, should be discontinued due to lack of profitability?

- a. Only the basic line should be discontinued.
  - b. Only the limited line should be discontinued.
  - c. Only the deluxe and limited lines should be discontinued.
  - d. None of the product lines should be discontinued.
39. For the first week of the month the Flour Shop Bakery budgeted to sell 100 cakes at \$35 each. They actually sold 105 cakes at \$40 each. The selling-price variance is
- a. \$525 favorable.
  - b. \$525 unfavorable.
  - c. \$700 favorable.
  - d. \$700 unfavorable.
40. Which one of the following statements about management by exception is **least** likely to be correct?
- a. Managers can focus efforts on most critical areas.
  - b. It is especially useful when directed at controllable items.
  - c. It could result in changing a process all together.
  - d. Positive variances need not be investigated.
41. Which one of the following is **least** likely to be a reason to adopt a standard cost system?
- a. Setting standards at an ideal level can motivate employees.
  - b. A standard cost system identifies the level of costs should be and who should be responsible for the costs.
  - c. Utilizing standard costs tends to simplify record-keeping.
  - d. Costs of using standard costing are low relative to costs of using actual costing.

42. Sugar Plums Inc. manufactures dresses for children. The variable overhead costs are allocated on the basis of budgeted direct labor hours. According to the December budget, each dress takes four direct labor hours to produce. Budgeted variable manufacturing overhead cost per labor hour is \$12 and the budgeted number of dresses to be made is 1,040. Actual variable manufacturing costs in December were \$52,164 for 1,080 dresses produced. Actual direct labor hours were 4,536 hours. The variable overhead spending variance is
- \$2,592 favorable.
  - \$2,592 unfavorable.
  - \$2,268 favorable.
  - \$2,268 unfavorable.
43. When comparing its actual operating income to its master budget operating income, the controller for Burke Corporation noted that actual total sales units equaled budgeted total sales units and budgeted fixed costs equaled actual fixed costs. He also noted that both products were sold for their budgeted selling prices per unit and each product had both a budgeted and actual contribution margin ratio of 40%. However, Burke experienced a favorable static budget variance for operating income for the period. Which one of the following is a viable explanation for this variance?
- The company produced fewer units than budgeted.
  - The company's income tax rate was lower than budgeted.
  - The method used to allocate fixed selling and administrative costs to its products was different than planned.
  - The product mix was different than budgeted.
44. Finnegan Corporation operates three distinct profit centers, each of which sells a unique product. Each division currently rents its own warehouse with the following characteristics.

	<u>Annual Cost</u>	<u>Square Footage Required</u>
Division 1	\$325,000	65,000
Division 2	\$145,000	30,000
Division 3	\$ 30,000	5,000

Finnegan has the opportunity to rent a warehouse containing 110,000 square feet for \$480,700 per year. This facility would be shared by all three divisions with the additional unused space reserved for the anticipated growth of Division 3. If Finnegan uses the incremental cost allocation method to assign the \$480,700 cost of the large warehouse, the amount allocated to Division 3 would be

- \$10,700.
- \$24,035.
- \$28,842.
- \$65,550.

45. Hometown Bowling Lanes has identified three revenue streams with the following income statements.

	<u>Bowling</u>	<u>Equipment Rental</u>	<u>Food Sales</u>
Revenues	\$9,000,000	\$300,000	\$1,200,000
Variable costs	1,100,000	150,000	1,150,000
Direct employee salaries	250,000	40,000	120,000
Common costs	<u>6,400,000</u>	<u>35,000</u>	<u>365,000</u>
Income (loss)	<u>\$1,250,000</u>	<u>\$ 75,000</u>	<u>(\$ 435,000)</u>

Hometown's **most** important consideration in determining whether or not to discontinue its food sales is

- employee morale.
  - its interrelationships with other products.
  - the ability to increase food sales.
  - the ease of implementing activity-based costing to better assign costs.
46. When using return on investment (ROI) in local currency to evaluate divisional performance, valuing assets at net book value would result in the highest ROI for
- international divisions in countries with high inflation.
  - international divisions in countries with high deflation.
  - retail divisions purchasing goods from manufacturing divisions at fixed prices.
  - retail divisions purchasing goods from manufacturing divisions at negotiated prices.
47. A standard cost system is often used in variance analysis because standard costs
- include past inefficiencies and take into account expected future changes.
  - exclude past inefficiencies and take into account expected future changes.
  - include past inefficiencies and exclude expected future changes.
  - exclude past inefficiencies and exclude expected future changes.

48. Sampson Appliances manufactures dishwashers and incurs the following selected costs.

Monthly equipment maintenance	\$ 5,000
Labor to ensure the closed dishwasher doors form a tight seal	8,000
Unplanned manufacturing machinery repairs	9,000
Labor to reattach doors due to misalignment found during inspection	1,500
Labor to reattach doors due to misalignment found by customers	1,200

When preparing a cost of quality report, the amount spent in the internal failure category would total

- a. \$1,500.
  - b. \$10,500.
  - c. \$11,700.
  - d. \$23,500.
49. Morris Metal Fabricators specializes in the production of metal antennae. The fabrication process includes three steps: cutting, bending and assembly. Cutting and bending processes are completed together and then units are sent to the assembly department for completion. Direct materials and conversion costs are added proportionately throughout the process. Units are 50% complete for both direct materials and conversion costs when the units are transferred from the cutting and bending process to assembly. Morris uses the FIFO (first in, first out) inventory method. The activity report for the assembly department for the current month is shown below.

Beginning inventory (60% complete)	240 units
Transferred in from cutting-bending department	680 units
Units completed and transferred out	800 units
Ending inventory (75% complete)	

What is the assembly department's equivalent units produced for the current month?

- a. 734 units.
- b. 746 units.
- c. 824 units.
- d. 890 units.

50. Bandito Company sells product XRP for \$180 per unit. Overhead is allocated based on direct labor hours. Bandito estimates overhead to be \$600,000 per month, which is 40% variable and 60% fixed. Direct labor hours budgeted per month for the entire factory total 100,000 hours and the hourly direct labor rate is \$9. Product XRP requires \$64 of direct material per unit and 2 hours of direct labor. Bandito has begun using throughput costing. If Bandito produces and sells 20,000 units of XRP this month, the total throughput contribution is
- \$3,240,000.
  - \$2,320,000.
  - \$1,960,000.
  - \$1,864,000.
51. Stone Company manufactures two products that incur joint costs of \$60,000. It costs an additional \$10,000 to produce 5,000 units of Product 1 and an additional \$30,000 to produce 10,000 units of Product 2. Product 1 is sold for \$8 per unit and Product 2 is sold for \$10 per unit. If the company uses the net realizable value method to allocate joint costs, the cost per unit of Product 1 is
- \$3.60.
  - \$5.43.
  - \$5.60.
  - \$6.00.
52. Lemmon Corporation's results for the past year are shown below.

Cost of goods available for sale	\$136,000
Ending balance, raw material inventory	6,000
Ending balance, work-in-process inventory	14,000
Ending balance, finished goods inventory	13,000
Manufacturing overhead applied	50,000
Actual manufacturing overhead	55,000

If Lemmon prorates any overapplied or underapplied overhead at the end of the year, cost of goods sold after proration would total

- \$140,150.
- \$127,100.
- \$126,950.
- \$118,900.

53. Augusta Company has accumulated its support costs into three pools that will be allocated to numerous products using the step-down method. Usage of each pool's services is shown below.

	<u>Pool 1</u>	<u>Pool 2</u>	<u>Pool 3</u>	<u>All Products</u>
Usage of Pool 1	0%	10%	8%	82%
Usage of Pool 2	6%	4%	10%	70%
Usage of Pool 3	10%	8%	10%	78%
Direct costs	\$150,000	\$80,000	\$55,000	

If Augusta allocates Pool 1's costs first, Pool 2's costs second, and Pool 3's costs third, the amount of costs allocated from Pool 2 to Pool 3 is

- \$11,875.
  - \$11,047.
  - \$9,500.
  - \$8,000.
54. Which one of the following **best** shows the sequence of business functions in the value chain?
- Research and Development, Design of Products and Processes, Production, Marketing, Distribution, Customer Service.
  - Design of Products and Processes, Research and Development, Finance, Production, Distribution, Customer Service.
  - Design of Products and Processes, Finance, Research and Development, Production, Distribution, Customer Service.
  - Research and Development, Finance, Design of Products and Processes, Production, Distribution, Customer Service.
55. Which one of the following statements about benchmarking is **not** correct?
- A budget may provide a benchmark that motivates employees to meet a company's goals.
  - A company may appropriately use benchmarks to evaluate employee or unit performance.
  - Benchmarking may include comparing a unit's achievements against other units within the company.
  - Comparing a unit's results against industry benchmarks is not usually considered as useful as comparing results to the budget.

56. Bea's Upholstery produces unique tapestries and bedding for hotel chains and uses a job order costing system. During the current month Bea's purchased \$50,000 of direct materials and incurred \$22,000 in direct labor. Overhead is applied on the basis of direct labor hours at a rate of 60%. Overapplied or underapplied overhead is closed to cost of goods sold at the end of the period. The actual overhead incurred this month was \$10,000. Balances in Bea's inventory accounts are presented below.

	<u>Beginning of month</u>	<u>End of month</u>
Direct materials	\$2,000	\$3,500
Work-in-process	5,000	9,000
Finished goods	2,500	1,700

What is the cost of goods manufactured this month?

- a. \$76,500.
  - b. \$79,700.
  - c. \$80,500.
  - d. \$83,700.
57. Bauer Hangings needs to produce 100 holiday wreaths in November to meet customer demand. The manufacturing facility has the capacity to produce 120 wreaths. The bill of materials for holiday wreaths is as follows.

<u>Material</u>	<u>Quantity</u>	<u>November 1 Inventory Level</u>
Frame	1	100
Pine ribbon	3 feet	15 feet
Pinecones	6	24

To produce one foot of pine ribbon, Bauer needs four units of TRX and two units of RBX. On November 1, Bauer has 80 units of TRX and 110 units of RBX on hand. Using material requirements planning, how many units of TRX will Bauer need to purchase in November to complete the orders for holiday wreaths?

- a. 1,020.
- b. 1,060.
- c. 1,200.
- d. 1,360.



58. Navy Parks produced two new products last year. Sales and cost data for the two products is summarized below.

	<u>BM2</u>	<u>SM4</u>
Sales price per unit	\$ 100	\$120
Quantity sold	1,500	970
Costs:		
R&D	\$20,000	\$28,000
Marketing	7,000	10,000
Direct materials	46,000	42,000
Direct labor	35,500	25,000
Manufacturing overhead	12,000	9,500
Warranties	4,000	5,500

- a. Both managers conclude that BM2 is the more profitable product.
  - b. Manager A finds SM4 to be more profitable than BM2.
  - c. Both managers conclude that BM2 and SM4 are profitable products.
  - d. Manager B finds both BM2 and SM4 to be unprofitable products
59. If Moore Corporation used a normal cost system, applying overhead based on the number of units produced, the variance that could arise that would not be present under an actual cost system is the
- a. direct material efficiency variance.
  - b. direct labor efficiency variance.
  - c. variable overhead efficiency variance.
  - d. fixed overhead production volume variance.

60. Rainbow Company uses a job order cost system and applies overhead using a plant-wide rate of \$5.75 per direct labor hour. Rainbow is considering changing to two departmental overhead rates with annual information shown below.

<u>Department</u>	<u>Machining Department</u>	<u>Assembly</u>
Allocation base	Machine hours	Direct labor hours
Departmental overhead costs	\$850,000	\$300,000
Machine hours used	250,000	30,000
Direct labor hours used	75,000	125,000

Rainbow tested its new system by comparing the plant-wide and departmental overhead assigned to two different jobs. The first job's allocated overhead using the plant-wide rate totaled \$23,000 and was \$23,750 using the two departmental rates. The second job took 5,000 machine hours in the Machining Department and a total of 3,000 labor hours of which 1,700 were used in the Assembly Department. Rainbow should

- change to two departmental overhead rates because of the significant (more than 10%) difference between methods for the second job.
  - change to two departmental overhead rates regardless of the differences between methods for better cause-and-effect relationships.
  - continue to use the plant-wide rate because of the insignificant (less than 10%) difference between methods for the first job.
  - search for cost drivers that would present more consistent results when the two methods are compared.
61. Information regarding Parrett Company's year-end account balances is shown below.

	<u>Account Balance (Before Proration)</u>	<u>Allocated Overhead in Each Balance</u>
Direct material inventory	\$ 100,000	\$ 0
Work-in-process inventory	25,000	10,000
Finished goods inventory	225,000	100,000
Cost of goods sold	2,250,000	890,000

If Parrett's overhead was overapplied by \$90,000 and the company uses the most accurate method of prorating overapplied or underapplied overhead, the balance in the cost of goods sold account after proration would be

- \$2,169,000.
- \$2,169,900.
- \$2,172,115.
- \$2,330,100.

62. Abbott Company is considering implementing a just-in-time system and would like to test the system on its packaging materials purchases. An analysis indicated that Abbott could reduce its carrying costs by \$5,000 each month if the just-in-time system was implemented. Before making this decision, Abbott should also consider a possible change in all of the following costs **except** an increase in the cost of
- a. ordering.
  - b. packaging labor.
  - c. packaging materials.
  - d. stockouts.
63. For purposes of cost control, process reengineering is **most** similar to
- a. activity-based costing.
  - b. kaizen budgeting.
  - c. variance analysis.
  - d. value-chain analysis.
64. The COSO model component of Risk Assessment focuses on
- a. identifying the risks in all areas and establishing the vulnerability of the organization.
  - b. the attitude of management at all levels toward operations and the concept of risk.
  - c. the controls such as approvals and documentation that addresses an organization's risk.
  - d. the timely communication of information relative to identified risks to management.
65. The statement below that **best** illustrates the importance of personnel policies and procedures is that personnel policies and procedures
- a. are integral to an efficient control environment.
  - b. should be implemented where it is cost beneficial.
  - c. should be evaluated for compliance by an external firm.
  - d. should be implemented where risks have been identified.
66. Accounting control should provide reasonable assurance about the achievement of management's objectives. The concept of internal controls providing "reasonable assurance" recognizes that
- a. the auditor's primary responsibility is the detection of fraud.
  - b. employee carelessness can weaken an internal accounting control system.
  - c. control procedures should not have an adverse effect on efficiency or profitability.
  - d. judgmentally selected samples do not meet the criteria for statistical validity.

67. Which one of the following represents a technique that is **most** appropriate for an internal auditor to use to test the effectiveness of accounting recordkeeping controls?
- a. Verify a receivable by comparing it to the accounting documentation.
  - b. Test a loan amount by sending a confirmation to the bank.
  - c. Perform an inquiry as to the timeliness of reconciliation completion.
  - d. Analyze the actual results to the budget and identify variances.
68. Which one of the following statements about internal control risk is correct?
- a. The establishment and maintenance of an internal control system within a company can effectively eliminate internal control risk.
  - b. The internal audit function is responsible for the establishment and maintenance of a company's internal control system.
  - c. Management has the responsibility to maintain controls that provide reasonable assurance that adequate control exists over the entity's assets and records.
  - d. Management's responsibility regarding internal control risk is limited to controls which provide assurance regarding the reliability of financial reporting.
69. Which one of the following is **not** a requirement of Section 404 of the Sarbanes-Oxley Act?
- a. Management is required to issue an internal control report that explicitly accepts responsibility for establishing and maintaining adequate internal control over financial reporting.
  - b. Management is required to issue an assertion as to whether internal control over financial reporting is effective as of the end of the fiscal year.
  - c. An entity's auditor is required to audit management's assertion about the effectiveness of internal control over financial reporting and express an opinion on its effectiveness.
  - d. An entity's auditor is required to perform a completely separate audit of internal control not related to the audit of the entity's financial statements in order to achieve objectivity.
70. The Foreign Corrupt Practices Act imposes which of the following requirements on companies whose securities are publicly traded in the U.S.?
- a. Devising and maintaining a system of internal accounting controls sufficient to provide reasonable assurance that transactions are executed in accordance with management's authorization.
  - b. Disclosure of information needed for informed investment decisions to potential investors of an initial public offering of the company's securities.
  - c. Periodic filing of a SEC form 8K, whenever a significant event takes place affecting the company's internal controls.
  - d. Issuance of an assertion as to whether the company's system of internal controls over financial reporting is effective as of the end of the fiscal year.

71. In a compliance audit, the internal auditor is **most** likely to
- identify the causes of a shortfall in production output.
  - examine the production process to determine if it is possible to enhance the efficiency or effectiveness of operations.
  - assist management with the internal control assessment required by the Sarbanes-Oxley Act.
  - determine whether the company's hiring practices are in conformity with laws regarding fair hiring and proper dismissal of employees.
72. A company's accounts payable supervisor assigned a vendor code to a storage facility owned by the supervisor then instructed the company's accounting system to pay monthly rent for a storage unit allegedly leased from the storage facility. This situation is an example of a failure of controls due to the lack of
- commitment to competence in job skills and knowledge.
  - an effective internal audit function.
  - appropriate segregation of duties.
  - appropriate physical controls.
73. Which one of the following procedures functions primarily as an output control over a company's payroll processing?
- The payroll process assigns each batch of timesheets a unique number recorded in a batch register.
  - The payroll application program performs a limit test that subjects any transaction involving more than 80 hours worked to review before processing.
  - The payroll files are assigned internal and external file labels that are checked by the application program before processing.
  - The payroll distribution log contains a schedule of when checks and reports are prepared with the names of individuals who are to receive the report.
74. Mark Tian, a staff accountant, becomes aware of an off-balance sheet bank account where funds have been diverted with offsetting credits approved by his immediate supervisor. His immediate supervisor refuses to discuss it and suggests Tian forget about it. Which one of the following should be Tian's next course of action in this circumstance?
- Put concerns in writing to the immediate supervisor and copy the company's independent auditor.
  - Discuss concerns with the level of management above the immediate supervisor.
  - Communicate concerns confidentially to the company's independent auditor.
  - Communicate concerns confidentially to the company's external legal counsel.

75. A company has a December 31 year end. Which one of the following options to increase net income during the last month of the company's fiscal year end would **least** likely result in a violation of the IMA's Statement of Ethical Professional Practice?
- a. Persuade suppliers to postpone billing until January 1.
  - b. Delay the year-end closing until January 4 to capture sales over the New Year's holiday in the current year.
  - c. Reduce the calculated allowance for bad debts and bad debt expenses.
  - d. Postpone planned marketing expenditures until January.
76. You have examined your organization's financial statements and determined that they present a number of significant items in a fraudulent manner. You know that you should report this situation to management, but are concerned that reporting it might result in your employment being terminated. Failure to report this situation is a violation of which of the ethical standard(s) outlined in IMA's Statement of Ethical Professional Practice?
- a. Credibility.
  - b. Confidentiality.
  - c. Competence.
  - d. Confidentiality and Integrity.

Answers - CMA Part 1 Practice Questions

- |       |       |       |
|-------|-------|-------|
| 1. c  | 35. b | 69. d |
| 2. c  | 36. b | 70. a |
| 3. a  | 37. a | 71. d |
| 4. c  | 38. d | 72. c |
| 5. b  | 39. a | 73. d |
| 6. c  | 40. d | 74. b |
| 7. d  | 41. a | 75. d |
| 8. a  | 42. c | 76. a |
| 9. d  | 43. d |       |
| 10. a | 44. a |       |
| 11. a | 45. b |       |
| 12. b | 46. a |       |
| 13. d | 47. b |       |
| 14. a | 48. b |       |
| 15. c | 49. b | .     |
| 16. a | 50. b | .     |
| 17. c | 51. c |       |
| 18. d | 52. b |       |
| 19. c | 53. a |       |
| 20. c | 54. a |       |
| 21. a | 55. d |       |
| 22. a | 56. b |       |
| 23. d | 57. b |       |
| 24. c | 58. a |       |
| 25. d | 59. d |       |
| 26. d | 60. a |       |
| 27. c | 61. b |       |
| 28. c | 62. b |       |
| 29. a | 63. d |       |
| 30. d | 64. a |       |
| 31. b | 65. a |       |
| 32. c | 66. c |       |
| 33. d | 67. b |       |
| 34. a | 68. c |       |

# External Financial Reporting Decisions

## Level C

### Sec.A.15%

Preparation of financial statements: balance sheet, income statement, statement of changes in equity, statement of cash flows; valuation of assets and liabilities; operating and capital leases; impact of equity transactions; revenue recognition; income measurement; major differences between U.S. GAAP and IFRS.

#### **Content Specification Outlines**

#### **A. External Financial Reporting Decisions (15%) (U1.1)**

##### **1. Financial statements**

- a. Balance sheet (U 1.2)
- b. Income statement (U1.3)
- c. Statement of changes in equity (U.1.4)
- d. Statement of cash flows (U1.5)

##### **2. Recognition, measurement, valuation, and disclosure**

- a. Asset valuation (U2.1, U2.2, U2.3, U 2.4, U 2.5 , U2.6, U 2.7 , U3.1 U3.2 & U3.3)
- b. Valuation of liabilities (U3.4, U3.5, U3.6 & U 3.7)
- c. Equity transactions (U1.6&U1.7)
- d. Revenue recognition (U1.6&U1.7)
- e. Income measurement (U2.8)
- f. Major differences between U.S. GAAP and IFRS(discussed in the above subunits)



# STUDY UNIT ONE

## EXTERNAL FINANCIAL STATEMENTS AND REVENUE RECOGNITION

### Gleim Subunits

- 1.1 Concepts of Financial Accounting
- 1.2 Statement of Financial Position (Balance Sheet)
- 1.3 Income Statement and Statement of Comprehensive Income
- 1.4 Statement of Changes in Equity and Equity Transactions
- 1.5 Statement of Cash Flows
- 1.6 Revenue Recognition - Revenue Recognition after Delivery
- 1.7 Revenue Recognition- Long Term Construction Contracts



### 1.1 Concepts of Financial Accounting

#### Nature of Financial Accounting

Accounting is the process of identifying, measuring, recording, and communicating economic information to enable users to make informed judgments and decisions.<sup>(N)</sup>

#### Financial Reporting Function

Financial accounting is the process that *culminates* in the preparation of financial reports on the enterprise for use by both internal and external parties.<sup>(K)</sup> Financial accounting is the process of **reporting the results** and effects of the financial transactions that a business undertakes.

The essential characteristics of accounting are:

- (1) the identification, measurement, and communication of financial information about
- (2) economic entities to
- (3) interested parties (including stockholders, creditors, government agencies, management, employees, consumers, labor unions, etc.).<sup>(K)</sup>

#### Objective of Financial Reporting

Provide financial information about the reporting entity that is useful to present and potential equity investors, lenders, and other creditors in **making decisions** in their capacity as capital providers (i.e., in decisions about providing resources to the company). **General-purpose financial statements** provide financial reporting information that is **useful in making decisions** to a wide variety of users.<sup>(K)</sup>

#### Financial reporting should

Provide information that is useful in investment and credit decisions  
Provide information that is useful in assessing cash flow  
Provide information about company resources, claims to those resources, and changes in them.

One objective of financial reporting for a company is to help investors, creditors, and others assess the amounts, timing, and uncertainty of the prospective net cash inflows of the company. To meet this objective, the FASB suggested that a company should provide certain types of accounting information in its financial statements.



### Financial reporting should:

#### **Provide information that is useful in investment and credit decisions**

1. Is useful to present and potential investors and creditors and other users **in making rational investment, credit, and similar decisions**. The information should be comprehensible to those who have a reasonable understanding of business and economic activities and are willing to study the information with reasonable diligence.

#### **Provide information that is useful in assessing cash flow**

2. Helps present and potential investors, creditors, and other users **assess the amounts, timing, and uncertainty of prospective cash receipts** from dividends or interest and the proceeds from the sale, redemption, or maturity of securities or loans.<sup>(K)</sup>

Since investors' and creditors' cash flows are related to enterprise cash flows, financial reporting should provide information to help investors, creditors, and others assess the amounts, timing, and uncertainty of prospective net cash inflows to the related enterprise.<sup>(K)</sup>

The decisions relate to buying, selling, or holding debt or equity instruments and providing credit. In order to make these decisions, investors, lenders and other creditors need information that will help them assess the amount of, timing of, and prospects for future net cash inflows to the entity.<sup>(HK)</sup>

### **Take a Note: Accrual Basis of Accounting**

The emphasis on "assessing cash flow prospects" does not mean that the cash basis is preferred over the accrual basis of accounting. That is not the case. *Information based on accrual accounting generally better indicates a company's present and continuing ability to generate favorable cash flows than does information limited to the financial effects of cash receipts and payments.*<sup>(K)</sup>

Financial statements are prepared under the **accrual basis of accounting**. Accrual accounting records the financial effects of transactions and other events and circumstances when they occur rather than when their associated cash is paid or received.

1) Revenues are recognized in the period in which they were earned even if the cash will be received in a future period.

2) Expenses are recognized in the period in which they were incurred even if the cash will be paid in a future period.

NOTE: Under the cash basis, revenues are recognized when cash is received and expenses are recognized when cash is paid. Under GAAP. Financial statements cannot be prepared under the cash basis of accounting.

#### **Provide information about company resources, claims to those resources, and changes in them**

3. Clearly portrays the economic resources of an enterprise, the claims to those resources (obligations of the enterprise to transfer resources to other entities and owners' equity), and the effects of transactions, events, and circumstances that change its resources and claims to those resources.

### **Take a Note: Users need to access information from other sources**

The types of decisions that these individuals are making are numerous and varied. It is not possible for accounting information to provide all of the necessary information that users need to make their decisions. Users need to access information from other sources, as well, such as economic forecasts, the political climate, and industry outlooks. However, the financial statements do attempt to provide as much useful information as possible to the users. <sup>(HK)</sup>

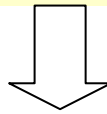
Users of these financial reports include investors, creditors, managers, unions, and government agencies. In contrast, managerial accounting is the process of identifying, measuring, analyzing, and communicating financial information needed by management to plan, control, and evaluate a company's operations.

**Question**

How general-purpose financial statements can be useful to external parties?

**Answer**

For general-purpose financial statements to be useful to external parties, they must be prepared in conformity with accounting principles that are generally accepted in the United States (GAAP).<sup>(GL)</sup>



**Need for Accounting Standards**

Published financial information must be in compliance with the *established accounting guidelines* because outside users will rely on it to make a variety of decisions. These rules and standards are in place to **protect outside users** by ensuring that the information is accurate and useful and can be understood by everyone.<sup>(HK)</sup>

### **Role of the Accounting Profession**

The accounting profession has developed a common set of standards and procedures known as **generally accepted accounting principles (GAAP)**. These principles serve as a general guide to the accounting practitioner in accumulating and reporting the financial information of a business enterprise. The main controversy in setting accounting standards is, "Whose rules should we play by, and what should they be?"<sup>(K)</sup>

Generally accepted accounting principles (GAAP) are those principles that have **substantial authoritative support**. Accounting principles that have substantial authoritative support are those found in:

- FASB Statements, Interpretations, and Staff Positions;
- APB Opinions; and
- Accounting Research Bulletins (ARBs).

If an accounting transaction is not covered in any of these documents, the accountant may look to other authoritative accounting literature for guidance.

**GAAP** is the guidelines, procedures, and practices that a company is required to use in recording and reporting the accounting information in its audited financial statements. The sources of GAAP includes pronouncements by the FASB, APB, CAP, and SEC in four categories of descending order of importance.<sup>(N)</sup>

The FASB developed the Financial Accounting Standards Board Accounting Standards Codification ("the Codification") to provide in one place all the authoritative literature related to a particular topic. The Codification changes the way GAAP is documented, presented, and updated. The Financial Accounting Standards Board Codification Research System (CRS) is an online real-time database that provides easy access to the Codification.



## Take a Note: CMA exam

The CMA exam also tests some knowledge of International Financial Reporting Standards (IFRS). When international standards diverge significantly from U.S. GAAP, the differences are highlighted. If there is no specification between GAAP and IFRS, use GAAP. <sup>(GL)</sup>



### IFRS INSIGHTS

Most countries have recognized the need for more global standards. The International Accounting Standards Board (IASB) and U.S. rule-making bodies are working together to reconcile U.S. GAAP with the IASB **International Financial Reporting Standards (IFRS)**. The FASB and the IASB agreed to make their existing financial reporting standards fully compatible as soon as practicable, and coordinate their future work programs to ensure that once achieved, compatibility is maintained. <sup>(K)</sup>

U.S. standards, referred to as generally accepted accounting principles (GAAP), are developed by the Financial Accounting Standards Board (FASB). The fact that there are differences between what is in this textbook (which is based on U.S. standards) and IFRS should not be surprising because the FASB and IASB have responded to different user needs. In some countries, the primary users of financial statements are private investors; in others, the primary users are tax authorities or central government planners. It appears that the United States and the international standard-setting environment are primarily driven by meeting the needs of investors and creditors. <sup>(K)</sup>

The SEC allows foreign companies to use IFRS in their financial statements filed with the SEC. The SEC is considering requiring or allowing U.S. companies to use IFRS. If adopted, this will likely take several years to implement because of its effect on U.S. companies, external users, and others. <sup>(K)</sup>



## BASIC FINANCIAL STATEMENTS AND THEIR USERS

Financial statements are the principal means through which a company communicates its financial information to those **outside it (external parties)**. These statements provide a company's *history* quantified in money terms.

The financial statements most frequently provided are:

- (1) the balance sheet (Statement of financial position),
- (2) the income statement (Statement of earnings),
- (3) the statement of cash flows, and
- (4) the statement of owners' or stockholders' equity  
("statement of retained earnings").
- (5) Statement of Comprehensive Income.

Financial statements complement each other. They describe different aspects of the **same transaction**, and more than one statement is necessary to provide information for a specific economic decision.

Additional information is provided by financial statement notes, supplementary information (such as management's discussion and analysis), and other disclosures.



### Take a Note: disclosures are an integral part of each financial statement

The notes to the financial statements are also considered an **integral part** of the financial statements but are not an actual financial statement. The purpose of the notes is to provide informative disclosures that are required by GAAP. Information typically disclosed in notes is essential to understanding the financial statements.

*Financial statement notes should **not** be used to correct improper presentation.*

- the president's letter or supplementary schedules in the corporate annual report,
- prospectuses,
- reports filed with government agencies,
- news releases,
- management forecasts, and
- social or environmental impact statements

Note: A company can also prepare prospective financial statements. Prospective financial statements are financial statements that are based on a set of assumptions and cover a future period. Whenever prospective financial statements are prepared, the significant accounting policies and significant assumptions that were made need to be disclosed. Prospective financial statements can also be called pro forma financial statements.

### Users of Financial Information/Statements

Because so many people are using the financial information and they are using it for so many diverse purposes, the reasons that people need the financial information are also diverse, such as to:

- Make investment decisions.
- Extend credit or not.
- Assess areas of strength and weakness within the company.
- Evaluate performance of management.
- Determine whether or not the company is in compliance with regulatory requirements.

Users may directly or indirectly have an economic interest in a specific business.

#### Direct vs. Indirect Users

Direct users are those who are directly affected by the results of a company.

Direct users are individuals who stand to lose money financially if the company has financial problems. Users with direct interests usually invest in or manage the business.

Users with **direct interests** include

- 1) Investors or potential investors
- 2) Suppliers and creditors
- 3) Employees
- 4) Management

Indirect users are those people or groups who represent direct users. Users with indirect interests advise, influence, or represent users with direct interests.

Users having **indirect interests** include

- 1) Financial advisers and analysts
- 2) Stock markets or exchanges
- 3) Regulatory authorities

#### Internal users vs. External users

Internal users make decisions within the firm whereas external users make decisions from outside of the firm about whether or not to begin a relationship with the firm, continue a relationship with the firm, or change their relationship to the firm.



**Internal users** use financial statements to make decisions affecting the operations of the business.

- **Management,**
  - needs financial statements to assess financial strengths and deficiencies, to evaluate performance results and past decisions, and to plan for future financial goals and steps toward accomplishing them.
- **Employees,**
  - want financial information to negotiate wages and fringe benefits based on the increased productivity and value they provide to a profitable firm. and
- **The board of directors.**

**External users** use financial statements to determine whether doing business with the firm will be beneficial.

- **Investors**
  - need information to decide whether to increase, decrease, or obtain an investment in a firm.
- **Creditors**
  - need information to determine whether to extend credit and under what terms.
- **Financial advisers and analysts**
  - need financial statements to help investors evaluate particular investments.
- **Stock exchanges**
  - need financial statements to evaluate whether to accept a firm's stock for listing or whether to suspend the stock's trading.
- **Regulatory agencies**
  - may need financial statements to evaluate the firm's conformity with regulations and to determine price levels in regulated industries.

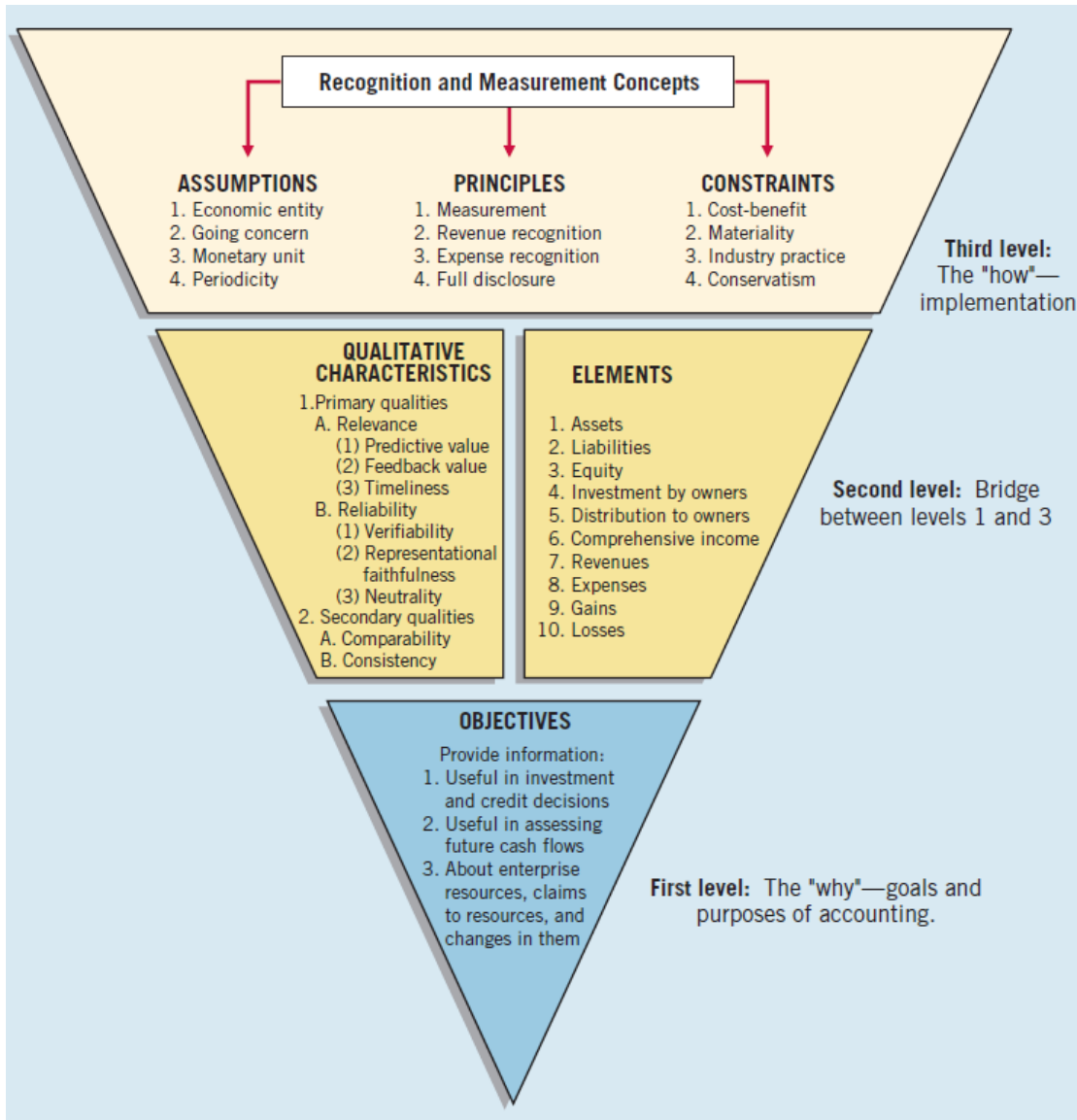
Note: Users of financial statements are assumed to have a **reasonable knowledge** of business and economic activities and to be willing to study the information with **reasonable diligence**. This is an important assumption because it means in the preparation of financial statements, a **reasonable level** of competence on the part of users can be assumed. Someone who has a reasonable understanding of business, accounting and economic activities should be able to read the financial information that is presented and understand it.





### **The usefulness of a Conceptual Framework for Financial Reporting**

The accounting profession needs a conceptual framework to: (1) build on and relate to an established body of concepts and objectives, (2) provide a framework for solving new and emerging practical problems, (3) increase financial statement users' understanding of and confidence in financial reporting, and (4) enhance comparability among companies' financial statements.



To be useful, information presented in the financial statements must be **relevant** and **faithfully represented**. To enhance the usefulness, the information should be **comparable** with similar information for (1) other entities and (2) the same entity for another period or date. Thus, **comparability** allows users to understand similarities and differences.



**Describe the basic assumptions of accounting underlie GAAP.**

Four basic assumptions underlying financial accounting are:

**(1) Economic entity:**

The activity of a company can be kept separate and distinct from its owners and any other business unit.<sup>(K)</sup>

The entity assumption, which relates economic activities to a particular economic entity<sup>(N)</sup>

**(2) Going concern** (the entity is assumed to continue operating indefinitely):

The company will have a long life. <sup>(K)</sup>

The continuity (going concern) assumption, which states that with no evidence to the contrary, a company will continue to operate in the near future. <sup>(N)</sup>

As a result, liquidation values are not important. It is assumed that the entity is not going to be liquidated in the rear future.<sup>(GL)</sup>

**(3) Monetary unit:**

Money is the common denominator by which economic activity is conducted, and the monetary unit provides an appropriate basis for measurement and analysis. <sup>(K)</sup>

The monetary unit assumption, which requires financial statement elements to be expressed in terms of the dollar. <sup>(N)</sup>

**(4) Periodicity:**

The economic activities of a company can be divided into artificial time periods. <sup>(K)</sup>

The period of time assumption, which allows the life of a company to be divided into artificial time periods and serves as the basis for the adjusting entry process<sup>(N)</sup>

**Explain the application of the basic principles of accounting that have greatly influenced the development of GAAP.**

**(1) Measurement principle:**

Existing GAAP permits the use of **historical cost**, fair value, and other valuation bases. Although the historical cost principle (measurement based on acquisition price) continues to be an important basis for valuation, recording and reporting of fair value information is increasing. <sup>(K)</sup>

The **historical cost** principle, which provides highly reliable, although not always the most relevant, information by measuring economic activities at their historical exchange price.<sup>(N)</sup>

**(2) Revenue recognition principle:**

A company generally recognizes revenue when (a) realized or realizable and (b) earned. <sup>(K)</sup>

The recognition principle, which determines when an item is to be reported in the financial statements (revenue recognition usually occurs when revenue is realized and the earnings process is complete)<sup>(N)</sup>

**(3) Expense recognition (matching) principle:**

As a general rule, companies recognize expenses when the service or the product actually makes its contribution to revenue (commonly referred to as matching). <sup>(K)</sup>

The matching principle, which applies accrual accounting by stating that expenses should be recognized in the same period as the related revenues.<sup>(N)</sup>

**(4) Full disclosure principle:**

Companies generally provide information that is of sufficient importance to influence the judgment and decisions of an informed user. <sup>(K)</sup>





**Describe the impact that constraints have on reporting accounting information.** The constraints and their impact are: (1) **Cost-benefit relationship:** The cost of providing the information must be weighed against the benefits that can be derived from using the information. *Thus, the accounting system should be designed to balance management information needs with the cost of obtaining that information.*<sup>(GL)</sup> (2) **Materiality:** Sound and acceptable standards should be followed if the amount involved is significant when compared with the other revenues and expenses, assets and liabilities, or net income of the company. (3) **Industry practices:** Follow the general practices in the company's industry, which sometimes requires departure from basic theory. (4) **Conservatism:** When in doubt, choose the solution that will be least likely to overstate net assets and net income. The conservatism principle, which states that when given alternative accounting valuations, the accountant should select the one that is least likely to overstate current period assets and income.<sup>(N)</sup>



## ACCOUNTING ASSUMPTIONS AND PRINCIPLES

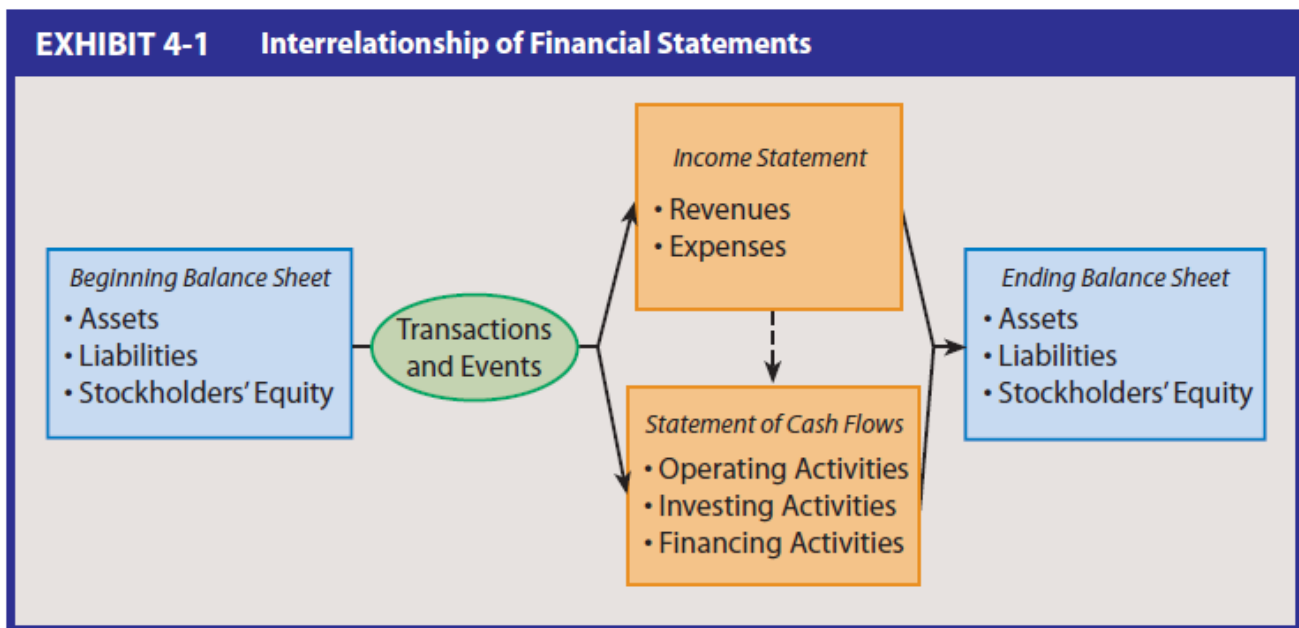
Certain accounting assumptions and principles have had an important impact on the development of GAAP. Exhibit 2-6 is useful in understanding the relationship among the objectives, types of useful information, qualitative characteristics, accounting assumptions and principles, generally accepted accounting principles, financial reports, and elements of financial statements.

EXHIBIT 2-6 Framework of Financial Accounting Theory and Practice	
Framework	Content
Objectives	<ol style="list-style-type: none"><li>1. Provide information useful to external users in assessing amounts, timing, and uncertainty of a company's cash flows.</li><li>2. Provide information about a company's economic resources, obligations, and owners' equity.</li><li>3. Provide information about a company's comprehensive income and its components.</li><li>4. Provide information about a company's cash flows.</li><li>5. Provide information about the stewardship responsibility of a company's management.</li><li>6. Provide full disclosure to help external users understand the preceding information.</li></ol>
Types of Useful Information	<ol style="list-style-type: none"><li>1. Return on investment.</li><li>2. Risk.</li><li>3. Financial flexibility.</li><li>4. Liquidity.</li><li>5. Operating capability.</li></ol>
Qualitative Characteristics of Useful Accounting Information	<ol style="list-style-type: none"><li>1. Decision usefulness.</li><li>2. Relevance (predictive value, feedback value, timeliness).</li><li>3. Reliability (verifiability, neutrality, and representational faithfulness).</li><li>4. Comparability (including consistency).</li><li>5. Benefits greater than costs, materiality.</li></ol>
Accounting Assumptions and Principles	<ol style="list-style-type: none"><li>1. Entity (assumption).</li><li>2. Continuity (going concern) (assumption).</li><li>3. Period of time (assumption).</li><li>4. Monetary unit (assumption).</li><li>5. Historical cost (principle).</li><li>6. Recognition (principle).</li><li>7. Matching and accrual (principles).</li><li>8. Conservatism (prudence) (principle).</li></ol>
Generally Accepted Accounting Principles	<ol style="list-style-type: none"><li>1. Guidelines, procedures, and practices required by a company to record and report its accounting information in audited financial statements.</li><li>2. Sources of GAAP are financial accounting standards established in pronouncements of FASB, APB, AICPA, and SEC, and in other accounting literature (see Exhibit 1-4).</li></ol>
Financial Reports	<ol style="list-style-type: none"><li>1. Balance sheet.</li><li>2. Income statement.</li><li>3. Statement of cash flows.</li><li>4. Statement of changes in stockholders' equity.</li><li>5. Notes to financial statements.</li><li>6. Supplementary and other information.</li></ol>
Elements of Financial Statements	<ol style="list-style-type: none"><li>1. Assets, liabilities, and equity.</li><li>2. Revenues, expenses, gains, and losses.</li><li>3. Operating, investing, and financing cash flows.</li><li>4. Investments by and distributions to owners.</li></ol>



## INTERRELATIONSHIP OF FINANCIAL STATEMENTS

Exhibit 4-1 shows the interrelationship of the information in a company's major financial statements. The solid lines indicate the major flows of interrelated financial accounting information among the financial statements because of transactions and events during the period. For instance, the company may use assets from the beginning balance sheet (i.e., the ending balance sheet from the previous period) in an income-producing activity or it may sell them as a source of cash. The related financial accounting information will affect the company's income statement and statement of cash flows, respectively. Both the information about the income-producing activities reported in the income statement and the information about the cash inflows and cash outflows shown in the statement of cash flows will affect the accounting information reported in the ending balance sheet. The dashed line indicates a secondary flow of the interrelated information; that is, the income producing activities that the company reports on its income statement also provide a net source of cash from operating activities.



### Take a Note: Financial Statement Relationships

The components (elements) of one statement relate to those of other statements. Among the relationships are those listed below:

- 1) Net income or loss from the statement of income is reported and accumulated in the retained earnings account, a component of the equity section of the statement of financial position.
- 2) The components of cash and equivalents from the statement of financial position are reconciled with the corresponding items in the statement of cash flows.
- 3) Items of equity from the statement of financial position are reconciled with the beginning balances on the statement of changes in equity.
- 4) Ending inventories are reported in current assets on the statement of financial position and are reflected in the calculation of cost of goods sold on the statement of income.
- 5) Amortization and depreciation reported in the statement of income also are reflected in asset and liability balances in the statement of financial position.

**Gleim Subunits****1.3 Income Statement and Statement of Comprehensive Income****The Income Statement**

The income statement is the report that measures the success of company operations for a *given period of time*. (It is also often called the statement of income, statement of earnings or statement of operations) <sup>(K)(N)</sup>

The income statement is created using the **accrual method of accounting** as applied to historical transactions. The income statement gives the results of operations for a period of time and is like a movie recording the events of the business for that period of time. This attribute of the income statement is in contrast to the balance sheet, which provides information as of one moment in time. <sup>(HK)</sup>

In the **accrual-based transactional approach**, a corporation's net income for an accounting period currently is measured as follows:

**The Income Equation**

$$\text{Income (Loss)} = \text{Revenues} - \text{Expenses} + \text{Gains} - \text{Losses}$$

**ELEMENTS OF FINANCIAL STATEMENTS**

**REVENUES.** Inflows or other enhancements (increases in) of assets of an entity or settlements of its liabilities *during a period* from delivering or producing goods, rendering services, or other activities that constitute the entity's *ongoing major or central operations*.

**EXPENSES.** Outflows or other using-up of assets or incurrences (decreases in) of liabilities during a period from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity's *ongoing major or central operations*.

**GAINS.** Increases in equity (net assets) from *peripheral or incidental* transactions of an entity except those that result from revenues or investments by owners.

**LOSSES.** Decreases in equity (net assets) from *peripheral or incidental* transactions of an entity except those that result from expenses or distributions to owners.

**Revenues** take many forms, such as sales, fees, interest, dividends, and rents. **Expenses** also take many forms, such as cost of goods sold, depreciation, interest, rent, salaries and wages, and taxes. **Gains and losses** also are of many types, resulting from the sale of investments or plant assets, settlement of liabilities, write-offs of assets due to impairments or casualty. <sup>(K)</sup>

Accordingly, **All transactions** affecting the net change in equity during the period **are included in income except:**

- 1) Transactions with owners
- 2) Prior-period adjustments (such as error correction or a change in accounting principle)
- 3) Items reported initially in other comprehensive income
- 4) Transfers to and from appropriated retained earnings

The accounts that are used to record revenues, expenses, gains and losses are **temporary (nominal) accounts**. They are closed to a **permanent (real) account** (retained earnings on the balance sheet) at the end of each period (fiscal year). Thus at the beginning of each fiscal year, the balances in the income statement accounts are zero. <sup>(HK)</sup>



**Take a Note: The distinction between revenues and gains, and between expenses and losses, depend to a great extent on the typical activities of the company.**

For example,

- when McDonald's sells a **hamburger**, it records the selling price as **revenue**.
- However, when McDonald's **sells land**, it records any excess of the selling price over the book value as a **gain**.
- Having income statement elements shown in some detail and in comparison with prior years' data allows decision makers to better assess future income and cash flows. <sup>(K)</sup>

### **Interrelationship of the Income Statement with other statements**

- The income statement and balance sheet are supported by a schedule entitled the statement of retained earnings (or simply the *retained earnings* statement), which serves as the link between the two statements.
- The operations of a company include routine ongoing activities, as well as activities that are infrequent or unusual.
- In addition,
  - a company may **divest itself of a major component** of its operations,
  - report **extraordinary** items, make changes in accounting principles, and
  - make adjustments to **prior periods'** financial statements.
- We also discuss the alternative ways a company may report its **comprehensive income** in its financial statements.
- In addition, we introduce the **statement of cash flows** in this chapter because of the relationship of operating, investing, and financing cash flows to different sections of the income statement and balance sheet. <sup>(N)</sup>

We discuss how a company reports each of these items in this chapter as it relates to the company's income statement or its statement of retained earnings.

**Before we get into the details of determining net income, it is helpful to understand the purposes of the income statement.**



### **PURPOSES OF THE INCOME STATEMENT**

Because a company's income statement summarizes its income-generating activities, many *external users* consider the income statement to be the most important financial statement. <sup>(N)</sup>

Why? As it helps users of financial statements predict future cash flows in a number of ways. For example, investors and creditors use the income statement information to achieve below objectives. <sup>(K)</sup>

A company's income statement summarizes the results of its operations for the accounting period. <sup>(N)</sup>

The business and investment community uses the income statement to determine

- profitability,
- investment value, and
- creditworthiness.

It provides investors and creditors with information that helps them predict the amounts, timing, and uncertainty of (prospects) future cash flows. <sup>(K)</sup>



**The purposes of a company's income statement are:**

1. Evaluate the past performance of the company.
2. To help in comparisons with other companies.
3. Provide a basis for predicting future performance (predict the company's future income and cash flows).
4. Help assess the risk or uncertainty of achieving future cash flows.
5. To help assess the company's "creditworthiness."

*In summary, information in the income statement—revenues, expenses, gains, and losses—helps users evaluate past performance. It also provides insights into the likelihood of achieving a particular level of cash flows in the future.*<sup>(K)</sup>

**Limitations of the Income Statement**

Because net income is an estimate and reflects a number of assumptions, income statement users need to be aware of certain limitations associated with its information.<sup>(K)</sup> Most of the limitations of the income statement are caused by its *periodic nature*. At any particular financial statement date, buying and selling will be in process, and some transactions will be *incomplete*. Therefore, net income for a period necessarily involves *estimates*, and these estimates affect the company's performance for the period.<sup>(HK)</sup>

**Some of these limitations that reduce the usefulness of the income statement for predicting amounts, timing and uncertainty of cash flows include:**

1. Companies omit items from the income statement that they cannot measure reliably.
2. Income numbers are affected by the accounting methods employed.
3. Income measurement involves judgment.
4. Net income is an estimate that reflects a number of assumptions.

*In summary, several limitations of the income statement reduce the usefulness of its information for predicting the amounts, timing, and uncertainty of future cash flows.*

**FORMAT OF THE INCOME STATEMENT**

**Single-Step and Multiple-Step Formats**

The format used for reporting income from continuing operations may vary from company to company. Many variations of two basic formats, *single-step* and *multiple-step*, are used in actual practice.

**Pure Single-Step Format**

Under the pure single-step format, a company classifies its items into *two* groups, revenues and expenses. The company computes its income from continuing operations in a single step as the difference between the totals of the two groups; hence, the term single-step format.<sup>(N)</sup>

**Variation single-step format**

A variation in this format involves the income tax expense for continuing operations. Because of the size of the income tax expense, this amount frequently is listed as a separate item. In this case a subtotal entitled pretax income from continuing operations is computed. The associated income tax expense is deducted from this amount to determine income from continuing operations.<sup>(N)</sup>

**Advantages of single-step format**

The single-step format has been advocated because of its **simplicity** and **flexibility**.



*Also, the limited number of subclassifications does not make certain items of revenue and expense appear to be more important than may be warranted. Although it is still a fairly common form of income statement, the number of companies using it is decreasing. Currently, about **14%** of surveyed companies use some variation of the single-step format.*

### Multiple-Step Format

Some accountants argue that the simplicity of the single-step format detracts from the usefulness of the income statement to external users. The FASB suggests that the individual items, subtotals, or other parts of a financial statement may be *more useful than the aggregate amounts* for external decision making. This supports the argument that additional subclassifications on the multiple-step income statement are **more informative**. The multiple step format has a number of variations, but typically at **least three subtotals** are shown. <sup>(N)</sup>

Initially, the cost of goods sold amount is deducted from net sales to determine the gross profit or gross margin on sales. The operating expenses are then deducted from (that is, matched against) gross profit to show operating income, which is the major portion of income from continuing operations.

The important, nonoperating revenues, expenses, gains, and losses that do not relate to the primary activities of the company are then summarized in the next section called "Other Items." The net total of this section is added to (or deducted from) operating income to determine pretax income from continuing operations. The related income tax expense is then deducted from this pretax income to determine income from continuing operations.<sup>(N)</sup>

Two **criticisms** may be raised against the multiple-step format. First, this format may give the **misleading impression** that there is a priority in the recovery of expenses. However, a company must recover all expenses in order to earn income. Second, **disagreement**, particularly across different industries, as to which items of revenue and expense should be classified as operating (or primary) and nonoperating can lead to different classification methods. This may result in noncomparable income statement formats. <sup>(N)</sup>

*Nonetheless, the multiple-step format is becoming more popular and is currently being used by about **86%** of surveyed firms.*



**Intermediate Components of the Income Statement**

When a company uses a multiple-step income statement, it may prepare some or all of the following sections or subsections.

**INCOME STATEMENT SECTIONS**

**1 OPERATING SECTION.** A report of the revenues and expenses of the company's *principal* operations.

(a) **Sales or Revenue Section.** A subsection presenting sales, discounts, allowances, returns, and other related information. Its purpose is to arrive at the net amount of sales revenue.

(b) **Cost of Goods Sold Section.** A subsection that shows the cost of goods that were sold to produce the sales.

(c) **Selling Expenses.** A subsection that lists expenses resulting from the company's efforts to make sales.

(d) **Administrative or General Expenses.** A subsection reporting expenses of general administration.

**2 NONOPERATING SECTION.** A report of revenues and expenses resulting from *secondary* or auxiliary activities of the company. In addition, special gains and losses that are infrequent or unusual, but not both, are normally reported in this section. Generally these items break down into two main subsections:

(a) **Other Revenues and Gains.** A list of the revenues earned or gains incurred, generally net of related expenses, from nonoperating transactions.

(b) **Other Expenses and Losses.** A list of the expenses or losses incurred, generally net of any related incomes, from nonoperating transactions.

**3 INCOME TAX.** A short section reporting federal and state taxes levied on income from continuing operations.

**4 DISCONTINUED OPERATIONS.** Material gains or losses resulting from the disposition of a segment of the business.

**5 EXTRAORDINARY ITEMS.** Unusual and infrequent material gains and losses.

**6 EARNINGS PER SHARE.**

Although the content of the operating section is always the same, the organization of the material can differ. The breakdown above uses a **natural expense classification**. Manufacturing concerns and merchandising companies in the wholesale trade commonly use this. Another classification of operating expenses, recommended for retail stores, uses a **functional expense** classification of administrative, occupancy, publicity, buying, and selling expenses.<sup>(K)</sup>

Usually, financial statements provided to external users have *less detail* than internal management reports. Internal reports include more expense categories—usually grouped along lines of responsibility. This detail allows top management to judge staff performance. Irregular transactions such as discontinued operations and extraordinary items are reported separately, following income from continuing operations.<sup>(K)</sup>





The standard multiple-step income statement format includes the following sections:

	Sales or service revenues
–	<u>Cost of goods sold (COGS)</u>
=	<b>Gross profit</b>
–	<u>Operating expenses: Selling, general, and administrative expenses</u>
=	<b>Operating income (Income from operation)</b> <sup>(K)</sup>
+	Interest and dividend income
–	Interest expense
+/-	<u>Non-operating gains/(losses)</u>
=	<b>Income from continuing operations before income tax</b>
–	<u>Provision for income taxes on continuing operations</u>
=	<b>Income from continuing operations</b>
+/-	Gains/(losses) on operations of discontinued component (net of applicable taxes)
+/-	<u>Gains/(losses) on disposal of discontinued component (net of applicable taxes)</u>
	<b>Income before extraordinary item</b>
+/-	Extraordinary gain/(loss)
	Less: Applicable income tax
=	<b>Net Income</b>

**Note:** “Income from continuing operations” on a multi-step income statement is **not** the same thing as “operating income.”

Operating income includes revenues and expenses generated by the company’s core business. Operating income does **not** include *financial income* (interest and dividend income) or *financial expense* (interest expense), nor does it include *non-operating gains and losses* or gains and losses on discontinued operations or extraordinary events.

Income from continuing operations, on the other hand, **does** include financial income and financial expense and non-operating gains and losses in addition to revenues and expenses generated by the company’s core business.

Income from continuing operations refers to income (loss) **other than** gains (losses) from discontinued operations and extraordinary events. It is called income from continuing operations to distinguish it from gains and losses on discontinued operations and extraordinary events.

The line “**Income from continuing operations**” appears on an income statement only if the firm is reporting results of discontinued operations. (i.e., Companies use the phrase “**Income from continuing operations**” only when gains or losses on discontinued operations occur).<sup>(K)</sup>

Similarly, the line “Income before extraordinary item” would appear on an income statement only if the firm is reporting extraordinary items.<sup>(HK)</sup>

### **Advantages of multiple-step income statement**

The disclosure of **net sales revenue** is useful because the firm reports regular revenues as a separate item. It discloses irregular or incidental revenues elsewhere in the income statement. As a result, *analysts can more easily understand and assess trends in revenue* from continuing operations.

Similarly, the reporting of **gross profit** provides a useful number for *evaluating performance* and *predicting future earnings*. Statement readers may study the trend in gross profits to determine how successfully a company uses its resources. They also may use that information to understand how competitive pressure affected profit margins.<sup>(K)</sup>

Finally, disclosing **income from operations** highlights the *difference between regular and irregular* or incidental activities. This disclosure helps users recognize that incidental or irregular activities are unlikely to continue at the same level. Furthermore, disclosure of operating earnings may assist in comparing different companies and assessing operating efficiencies.<sup>(K)</sup>

**Multiple-Step Income Statement****BANNER CORPORATION****Income Statement**

For Year Ended December 31, 2010

Sales revenue		\$150,000
Less: Sales returns and allowances	\$ 4,000	
Sales discounts taken	<u>2,300</u>	<u>(6,300)</u>
Net sales		\$143,700
Cost of goods sold (Example 5-2)		<u>(86,000)</u>
Gross profit		\$ 57,700
Operating expenses		
Selling expenses (Example 5-3)	\$10,200	
General and administrative expenses (Example 5-3)	16,000	
Depreciation expense (Example 5-3)	<u>7,800</u>	
Total operating expenses		<u>(34,000)</u>
Operating income		\$ 23,700
Other items		
Interest revenue	\$ 1,800	
Dividend revenue	600	
Loss on sale of equipment	(4,000)	
Interest expense	<u>(2,100)</u>	<u>(3,700)</u>
Pretax income from continuing operations		\$ 20,000
Income tax expense		<u>(6,000)</u>
Income from continuing operations		\$ 14,000
Results from discontinued operations		
Income from operations of discontinued component A (net of \$1,950 income taxes)	\$ 4,550	
Loss on disposal of component A (net of \$3,150 income tax credit)	<u>(7,350)</u>	<u>(2,800)</u>
Income before extraordinary items		\$ 11,200
Extraordinary loss from explosion (net of \$750 income tax credit)		<u>(1,750)</u>
Net Income		<u>\$ 9,450</u>

**Earnings per Common Share**  
(5,000 shares)

<u>Components of Income</u>	
Income from continuing operations	\$ 2.80
Results from discontinued operations	(0.56)
Extraordinary loss from explosion	<u>(0.35)</u>
Net income	<u>\$ 1.89</u>

Companies **must disclose** earnings per share on the face of the income statement. A company that reports a discontinued operation or an extraordinary item **must report** per share amounts for these line items either on the *face* of the income statement or in the *notes* to the financial statements. <sup>(K)</sup>

Many corporations have simple capital structures that include only common stock. For these companies, a presentation such as "Earnings per common share" is appropriate on the income statement. In many instances, however, companies' earnings per share are subject to **dilution** (reduction) in the future because existing contingencies permit the issuance of additional common shares. <sup>(K)</sup>

**Single-Step Income Statement**

A single-step income statement may also be used. A single-step income statement has only two groupings: revenues and expenses. Total expenses are subtracted from total revenues to determine the net income or loss. The primary advantage of the single-step format lies in its **simple** presentation and the absence of any implication that one type of revenue or expense item has priority over another. This format thus eliminates potential classification problems...(K)

Note: In addition to all of this information regarding income, information regarding Earnings per Share (EPS) must also be disclosed on the face of the income statement.

**BANNER CORPORATION****Income Statement**

For Year Ended December 31, 2010

**Revenues**

Sales revenue (net of \$2,300 discounts and \$4,000 returns and allowances)	\$143,700	
Interest revenue	1,800	
Dividend revenue	600	
<b>Total revenues</b>		<b>\$ 146,100</b>

**Expenses**

Cost of goods sold (Example 5-2)	\$ 86,000	
Selling expenses (Example 5-3)	10,200	
General and administrative expenses (Example 5-3)	16,000	
Depreciation expense (Example 5-3)	7,800	
Loss on sale of equipment	4,000	
Interest expense	2,100	
Income tax expense	6,000	
<b>Total expenses</b>		<b>(132,100)</b>

Income from continuing operations

\$ 14,000

**Results from discontinued operations**

Income from operations of discontinued component A (net of \$1,950 income taxes)	\$ 4,550	
Loss on disposal of component A (net of \$3,150 income tax credit)	(7,350)	(2,800)

Income before extraordinary items

\$ 11,200

Extraordinary loss from explosion

(1,750)

(net of \$750 income tax credit)

Net Income

\$ 9,450

Single Step:

All Revenues

minus

All Expenses

equals

Income from  
Continuing  
Operations**Components of Income**

	Earnings per Common Share (5,000 shares)
Income from continuing operations	\$ 2.80
Results from discontinued operations	(0.56)
Extraordinary loss from explosion	(0.35)
<b>Net income</b>	<b><u>\$ 1.89</u></b>

**Elements of the Income Statement****INCOME STATEMENT: INCOME FROM CONTINUING OPERATIONS**

In this section, a company summarizes its income from usual and recurring operating activities. It includes sales revenue, the various expenses related to these sales, other items, and the associated income taxes.

**Revenues**

Revenues represent inflows or other enhancements to assets or settlements of liabilities as a result of delivering goods or providing services that are the entity's **main or central operations**. Revenues are usually *recognized when the earnings process* (the provision of goods or services to the customer) is *complete* and an exchange has taken place. The exchange does not need to include cash but may include a promise to pay in the future (a receivable). <sup>(HK)</sup>

Sales revenue includes the gross charges to customers for the goods and services provided during the period. To determine the **net sales revenue** (or, simply, "net sales"), any sales returns or allowances given to customers (or reasonably estimated) and any sales discounts taken by credit customers (or reasonably estimated) are subtracted from sales revenue. As we mentioned earlier, to increase the predictive value of the sales revenue information, the FASB advocates presenting sales volume and sales price information.<sup>(N)</sup>

**However, revenue may also be recognized under the following methods in the right circumstances:**

- Percentage-of-completion for long-term contracts,
- Production basis for agricultural products and precious metals if they have (1) interchangeable (fungible) units and (2) quoted prices available in an active market that can rapidly absorb the quantity held by the entity without significantly affecting the price,
- Installment basis, used when we are not certain of the collectability of the account, and
- Cost-recovery basis, a method of accounting for an installment basis sale where recognition of the gross profit is deferred until all cost of the sales has been recovered. Used when the seller is unable to measure the certainty of collectability. <sup>(HK)</sup>

**Expenses**

Expenses are outflows or other using-up of assets or the incurrence of liabilities as a result of delivering goods or providing services that are the entity's main or central operations.<sup>(HK)</sup>

The **expense recognition principles** are associating cause and effect, systematic and rational allocation, and immediate recognition. **Matching** is essentially synonymous with associating **cause and effect**. Such a direct relationship is found when the cost of goods sold is recognized in the same period as the revenue from the sale of the goods.<sup>(GL)</sup>

**Expenses are recognized based upon one of the following three methods:**

- **Cause and effect:** the cost of a item sold is recognized as **cost of goods sold** when the item is sold,
- Systematic and rational allocation such as **depreciation**, and
- **Immediate recognition:** if an expense will not provide future benefit, it is immediately recognized.

<sup>(HK)</sup>

The **cost of goods sold** is the cost of the inventory items sold to customers during the period. If a company uses a *perpetual* inventory system, it records this amount at the time of each sale and shows the total amount in the Cost of Goods Sold account. The company reports this amount as the cost of goods sold on its income statement. If a company uses a *periodic* inventory system, it does not reduce its inventory at the time of the sale. Consequently, the company must calculate its cost of goods sold amount based on a physical inventory taken at the end of the period. Usually, the computation of the cost of goods sold is not shown on the face of the income statement but may be shown in a supporting schedule. <sup>(N)</sup>



For a retailer, cost of goods sold is calculated based on changes in inventory:

Beginning inventory	\$10,000
Plus: net purchases	14,000
Plus: freight-in	<u>1,000</u>
Goods available for sale	\$25,000
Minus: ending Inventory	<u>(5,000)</u>
Cost of goods sold:	<u>\$20,000</u>

For a manufacturer, cost of goods sold is calculated as follows:

Beginning raw materials inventory	\$3,000
Plus: purchases during the period	3,000
Ending raw materials Inventory	<u>(1,000)</u>
Direct materials used in production \$	5,000
Direct labor costs	5,000
Manufacturing overhead costs	4,000
(fixed + variable)	
Total manufacturing costs	\$14,000
Beginning work-in-process inventory	
Ending work-in-process inventory	
Cost of goods manufactured	
Cost of goods sold:	<u>\$20,000</u>

**Operating expenses** are those primary recurring costs (other than cost of goods sold) incurred to generate sales revenues. These expenses typically are classified according to *functional* categories. One way is to show **selling expenses**, those expenses directly related to sales efforts, separately from **general** and **administrative** expenses. Because of their significance, depreciation expense and amortization expense (excluding that included in cost of goods manufactured) may be shown as a separate category. Research and development expense may also be shown as a separate category. Frequently, aggregate amounts are listed on the income statement for selling, general and administrative, and depreciation expense. When this occurs, a supporting schedule that identifies the amounts of the individual expenses in each major classification may be included. Example 5-3 shows this supporting schedule for Banner Corporation.<sup>(N)</sup>

Note: The expense recognition principle, commonly called the **matching principle**, states that **recognition** of expenses is related to net changes in assets and the earning of revenues. Expenses should be recognized during a period as a result of delivering or producing goods and/or performing services and recognizing the associated revenue during that period. Thus, expenses should be recognized when the work or product contributes to revenue. The expense recognition principle is implemented by matching efforts (or expenses) with accomplishments (revenues).<sup>(HK)</sup>

### Function based vs. behavior based cost classification

An alternative to classifying expenses by functions is to classify them according to how they vary with the volume of the main activities of the company. Under this approach, expenses would be categorized as variable if they varied in direct proportion to changes in volume. Expenses would be categorized as fixed if their amount was not affected by changes in volume during the accounting period. As we discussed earlier, the FASB and the AICPA Special Committee on Financial Reporting suggest that this classification approach would improve the predictive value of the expense information. Although many companies classify their costs as fixed and variable for internal (management) reports, nearly all continue to classify them by functions on their external financial statements. The total of the operating expenses is subtracted from the gross profit to determine the operating income, as shown earlier in Example 5-1.<sup>(N)</sup>

### Other Items

Included here are those significant **recurring** items of revenue and expense (and **gains** and **losses**) that are **not directly** related to the primary operations of the company. Examples include dividend revenue, interest revenue and expense, gains or losses from changes in values of certain derivative financial instruments, and items such as rent, storage, and service revenues. Also included in this section are (1) material gains and losses resulting from sales of assets that are not considered to be “components” (as we will discuss in the results of discontinued operations section later in this chapter), and (2) material



but “nonextraordinary” gains and losses that result from events that are either unusual in nature or infrequent in occurrence. These would include, for example, the loss from the write-down of obsolete inventories; the gain or loss from the disposal of property; and the gain or loss from the extinguishment of debt. As shown in Example 5-1, a loss on the sale of equipment is included in this section of the Banner Corporation’s income statement because the sale is considered to be an infrequent but not unusual event. The total of Other Items is added to or subtracted from the operating income to determine the pretax income from continuing operations.<sup>(N)</sup>

**Gains** are increases in equity as a result of transactions that are not part of the company’s main or central operations and that do not result from revenues or investments by the owners of the entity.

**Losses** are decreases in equity as a result of transactions that are not part of the company’s main or central operations and that do not result from expenses or distributions made to owners of the entity.

The difference between revenues and gains and between expenses and losses depends on what the company’s typical activities are. For example, the sale of a product as part of a company’s normal operations constitutes revenue. However, the sale of a fixed asset is not part of the company’s regular operations, so the excess of the amount received for the asset over its net book value is a gain, not revenue.<sup>(HK)</sup>

## REPORTING VARIOUS INCOME ITEMS

GAAP allows flexibility in the presentation of the components of income. However, the FASB developed specific guidelines in two important areas: what to include in income and how to report certain unusual or irregular items.<sup>(K)</sup> What should be included in net income and where it should be reported is controversial. For example, should companies report a gain or loss on sale of an investment as part of net income or report it directly in retained earnings? Should a company report a loss on discontinued operations differently than interest expense? What we therefore need is consistent and comparable income reporting practices. Why? to avoid “promotional” information reported by companies. Developing a framework for reporting income components is important to ensure reliable income information.<sup>(K)</sup>

Some users advocate a current operating performance approach to income reporting. These analysts argue that the most useful income measure reflects only regular and recurring revenue and expense elements. Some irregular items do not reflect a company’s future earning power.

In contrast, others warn that a focus on operating income potentially misses important information about a company’s performance. Any gain or loss experienced by the company, whether directly or indirectly related to operations, contributes to its long run profitability.<sup>(K)</sup>

So, what to do? The accounting profession has adopted a *modified all-inclusive concept* and requires application of this approach in practice. In this approach, companies record most items, including unusual or irregular ones, as part of net income. In addition, companies are required to highlight irregular items in the financial statements so that users can better determine the long-run earning power of the company.<sup>(K)</sup>

**These income items fall into four general categories, which we discuss in the following sections:**

1. Unusual gains and losses.
2. Discontinued operations.
3. Extraordinary items.
4. Noncontrolling interest.



**Unusual Gains and Losses**

The following items may need separate disclosure on the income statement in order to help users to predict amounts, timing and uncertainty of future cash flows. (K)

- Losses on write-downs or write-off of receivables; inventories; property, plant, and equipment; deferred research and development costs; or other intangible assets.
- Gains or losses from exchange or translation of foreign currencies, including those relating to major devaluations and revaluations.
- Restructuring charges.
  - A restructuring charge relates to a major reorganization of company affairs, such as costs associated with employee layoffs, plant closing costs, write-offs of assets, and so on. A company should not report a restructuring charge as an extraordinary item, because these write-offs are part of a company's ordinary and typical activities.

Companies generally report unusual items in a separate section on the income statement just above Income from Operations Before Income Taxes.

Unusual gains and losses are different from extraordinary gains and losses, covered below. Although unusual gains and losses do not qualify to be reported as extraordinary gains and losses, the firm may want to show them separately.

**Discontinued Operations**

A discontinued operation occurs when two things happen: (a) a company *eliminates* the results of operations and cash flows of a *component* from its ongoing operations, and (b) there is no significant continuing involvement in that component after the disposal transaction. (K)

A **component** of a company involves operations and cash flows that can be clearly *distinguished*, operationally and for financial reporting purposes, from the rest of the company. A component of a company may be, for instance, a subsidiary, an operating segment (e.g., division), or an asset group. (N)

A discontinued operation exists whenever a company makes a decision to dispose of an *identifiable* part of its business. The discontinuation can take the form of the sale of a part of the business or spinning-off part of the company to form a new company. The discontinuation can also occur through the abandonment of the assets. (HK)

**Gains or Losses Treatment**

All gains or losses that are incurred by the discontinued segment are reported in the period in which the gain or loss occurred; and this disclosure on the income statement is done net of taxes. (HK)

Companies report as discontinued operations (in a separate income statement category) the gain or loss from disposal of a component of a business. In addition, companies report the results of operations of a component that has been or will be disposed of separately from continuing operations. Companies show the effects of discontinued operations net of tax as a separate category, after continuing operations but before extraordinary items. (K)

As soon as the company *makes the decision* to dispose of a component of the business, the operations (incomes and expenses) of the component to be disposed of should be reported on one line net of tax below income from continuing operations. When the *actual disposal takes place*, the gain or loss from the disposal is also reported net of tax below income from continuing operations. The gain or loss from the actual disposal of the component should be reported on a separate line from the gain or loss from the operations of the discontinued component, as follows:



Income from continuing operations

Discontinued operations:

+/- Gain/(loss) on *operations* of discontinued component (net of applicable taxes)

+/- Gain/(loss) on *disposal* of discontinued component (net of applicable taxes)

Net Income

In other words, all gains and losses from the component to be discontinued should be removed from income from continuing operations so users of the financial statements can see what income from continuing operations is without the operations of the component to be disposed of. <sup>.(HK)</sup>

Companies use the phrase “Income from continuing operations” only when gains or losses on discontinued operations occur. <sup>.(K)</sup>

To illustrate, Multiplex Products, Inc., a highly diversified company, decides to discontinue its electronics division. During the current year, the electronics division lost \$300,000 (net of tax). Multiplex sold the division at the end of the year at a loss of \$500,000 (net of tax). Multiplex shows the information on the current year’s income statement as follows.

Income from continuing operations		\$20,000,000
Discontinued operations		
Loss from operation of discontinued electronics division (net of tax)	\$300,000	
Loss from disposal of electronics division (net of tax)	500,000	<u>800,000</u>
Net income		<u>\$19,200,000</u>

### **Intraperiod Tax Allocation** for Discontinued Operations

As indicated companies report discontinued operations net on the income statement net of tax. The allocation of tax to this item is called **intraperiod tax allocation**, that is, allocation within a period.

It relates the income tax expense (sometimes referred to as the income tax provision) of the fiscal period to the specific items that give rise to the amount of the tax provision. Intraperiod tax allocation helps financial statement users better understand the impact of income taxes on the various components of net income. For example, readers of financial statements will understand how much income tax expense relates to “income from continuing operations” and how much relates to certain irregular transactions and events. This approach should help users to better predict the amount, timing, and uncertainty of future cash flows. In addition, intraperiod tax allocation discourages statement readers from using pretax measures of performance when evaluating financial results, and thereby recognizes that income tax expense is a real cost. <sup>.(K)</sup>

Companies use intraperiod tax allocation on the income statement for the following items: (1) income from continuing operations, (2) discontinued operations, and (3) extraordinary items. The general concept is “**let the tax follow the income.**” To compute the income tax expense attributable to “Income from continuing operations,” a company would find the income tax expense related to both the revenue and expense transactions used in determining this income. (In this computation, the company does not consider the tax consequences of items excluded from the determination of “Income from continuing operations.”) Companies then associate a separate tax effect with each irregular item (e.g., discontinued operations and extraordinary items). Here we look in more detail at calculation of intraperiod tax allocation for extraordinary gains and losses.



**Discontinued Operations (Gain)**

In applying the concept of intraperiod tax allocation, assume that Schindler Co. has income before income tax of \$250,000. It has gain of \$100,000 from a discontinued operations. Assuming a 30 percent income tax rate, Schindler presents the following information on the income statement.

**ILLUSTRATION 4-13 Intraperiod Tax Allocation, Discontinued Operations**

Income before income tax		\$250,000
Income tax		<u>75,000</u>
Income from continuing operations		175,000
Gain on discontinued operations	\$100,000	
Less: Applicable income tax	<u>30,000</u>	<u>70,000</u>
Net income		\$245,000

Schindler determines the income tax of \$75,000 (\$250,000 – 30%) attributable to “Income before income tax and extraordinary item” from revenue and expense transactions related to this income. Schindler **omits** the tax consequences of items excluded from the determination of “Income before income tax.” The company shows a separate tax effect of \$30,000 related to the “Gain on discontinued operations.”

**Discontinued Operations (Loss)**

To illustrate the reporting of a loss from discontinued operations, assume that Schindler Co. has income before income tax of \$250,000. It also has a loss from discontinued operations of \$100,000. Assuming a 30 percent tax rate, Schindler presents the income tax on the income statement as shown in Illustration 4-14. In this case, the loss provides a positive tax benefit of \$30,000. Schindler, therefore, subtracts it from the \$100,000 loss.

**ILLUSTRATION 4-14 Intraperiod Tax Allocation, Discontinued Operations**

Income before income tax		\$250,000
Income tax		<u>75,000</u>
Income from continuing operations		175,000
Loss from discontinued operations	\$100,000	
Less: Applicable income tax reduction	<u>30,000</u>	<u>70,000</u>
Net income		<u>\$105,000</u>

As you can see in the above Illustrations income tax due should be allocated first to income from continuing operations. Then the remaining tax due should be pro-rated among gains/losses from discontinued operations, extraordinary items and any other items according to each one's proportion of the total other income.(HK)

Companies may also report the tax effect of discontinued operations item by means of a note disclosure, as illustrated below.

**ILLUSTRATION 4-15 Note Disclosure of Intraperiod Tax Allocation**

Income before income tax	\$250,000
Income tax	<u>75,000</u>
Income from continuing operations	175,000
Loss from discontinued operations less applicable income tax reduction(Note 1)	<u>70,000</u>
Net income	<u>\$105,000</u>



Note 1: During the year the Company suffered a loss on discontinuing operations of \$70,000, net of applicable income tax reduction of \$30,000.

### **Extraordinary Items**

#### **A. Defined** (unusual and infrequent)

Under U.S. GAAP, extraordinary items are transactions and other events that are:

1. Material (nonrecurring) in nature,
2. Of a character significantly different from the typical or customary business activities,
3. Not expected to recur in the foreseeable future, and
4. Not normally considered in evaluating the ordinary operating results of an enterprise.

#### **The criteria for extraordinary items are as follows.**

Extraordinary items are events and transactions that are *distinguished* by their **unusual nature** and by the **infrequency** of their occurrence. Classifying an event or transaction as an extraordinary item requires meeting **both** of the following criteria:

(a) **Unusual Nature**. The underlying event or transaction should possess a high degree of *abnormality* and be of a type *clearly unrelated* to, or only incidentally related to, the ordinary and typical activities of the company, taking into account the environment in which it operates.

(b) **Infrequency of Occurrence**. The underlying event or transaction should be of a type that the company *does not reasonably* expect to recur in the foreseeable future, taking into account the environment in which the company operates.

#### **B. How to Classify**

Extraordinary items are usually determined by informed professional judgment, taking into consideration all the facts involved in a particular situation. In determining whether an item is extraordinary, a company must consider the environment in which it operates.

#### **C. Separate Disclosure**

Extraordinary items must be separately disclosed in the income statement, net of any related tax effects, after discontinued operations.

#### **D. Examples of Extraordinary Items**

1. The abandonment of, or damage to, a plant due to an *infrequent* earthquake or an *infrequent* flood.
2. An expropriation of a plant by the government.
3. A prohibition of a product line by a newly enacted law or regulation.
4. Certain gains or losses from extinguishment of long-term debt, provided they are **not part** of the entity's recurring operations and, thus, meet the criteria of unusual and infrequent.

#### **E. Examples of Non-extraordinary Items**

The following gains or losses are **NOT** extraordinary (they are presented as a separate component of "continuing operations"):

1. Gain or loss from sale or abandonment of property, plant, or equipment used in the business.
2. Large write-downs or write-offs of:
  - a. Receivables.
  - b. Inventories.
  - c. Intangibles (including goodwill).
  - d. Long-term securities (permanent decline).



3. Gain or loss School of Continuing Education from foreign currency transactions or translation, whether from major devaluations or otherwise (provided these occur on a regular basis as part of normal business operations).
4. Losses from major strike by employees.
5. Long-term debt extinguishments that are part of a common management strategy (i.e. **not** unusual and infrequent).

The above items are not considered extraordinary “because they are usual in nature and may be expected to recur as a consequence of customary and continuing business activities.”

When a company has a gain or loss from an extraordinary item, its income statement has a line “Income before extraordinary item” and the extraordinary gain or loss is reported below the line, net of applicable income tax, as follows<sup>(HK)</sup>

Income before income tax and extraordinary item  
Income Tax  
Income before extraordinary item  
+/- Extraordinary gain (loss) [describe]  
Less: Applicable income tax  
Net Income

For example, Illustration 4-8 shows how Keystone Consolidated Industries reported an extraordinary loss.

Keystone Consolidated Industries, Inc.	
Income before extraordinary item	\$11,638,000
Extraordinary item—flood loss	(Note E) 1,216,000
Net income	\$10,422,000

Note E: Extraordinary Item. The Keystone Steel and Wire Division’s Steel Works experienced a flash flood on June 22. The extraordinary item represents the estimated cost, net of related income taxes of \$1,279,000, to restore the steel works to full operation.

**Intraperiod Tax Allocation** for Extraordinary Item (same as above for discontinued operations, so you do not need to spend a lot of time studying the below explanation)

### **Extraordinary Gains**

In applying the concept of intraperiod tax allocation, assume that Schindler Co. has income before income tax and extraordinary item of \$250,000. It has an extraordinary gain of \$100,000 from a condemnation settlement received on one its properties. Assuming a 30 percent income tax rate, Schindler presents the following information on the income statement.

#### ILLUSTRATION 4-13 Intraperiod Tax Allocation, Extraordinary Gain

Income before income tax and extraordinary item		\$250,000
Income tax		<u>75,000</u>
Income before extraordinary item		175,000
Extraordinary gain—condemnation settlement	\$100,000	
Less: Applicable income tax	<u>30,000</u>	<u>70,000</u>
Net income		<u><u>\$245,000</u></u>



Schindler determines the income tax of \$75,000 (\$250,000 – 30%) attributable to “Income before income tax and extraordinary item” from revenue and expense transactions related to this income. Schindler omits the tax consequences of items excluded from the determination of “Income before income tax and extraordinary item.” The company shows a separate tax effect of \$30,000 related to the “Extraordinary gain— condemnation settlement.”

### **Extraordinary Losses**

To illustrate the reporting of an extraordinary loss, assume that Schindler Co. has income before income tax and extraordinary item of \$250,000. It suffers an extraordinary loss from a major casualty of \$100,000. Assuming a 30 percent tax rate, Schindler presents the income tax on the income statement as shown in Illustration 4-14. In this case, the loss provides a positive tax benefit of \$30,000. Schindler, therefore, subtracts it from the \$100,000 loss.

#### ILLUSTRATION 4-14 Intraperiod Tax Allocation, Extraordinary Loss

Income before income tax and extraordinary item		\$250,000
Income tax		<u>75,000</u>
Income before extraordinary item		175,000
Extraordinary item—loss from casualty	\$100,000	
Less: Applicable income tax reduction	<u>30,000</u>	<u>70,000</u>
Net income		<u>\$105,000</u>

Companies may also report the tax effect of an extraordinary item by means of a note disclosure, as illustrated below.

#### ILLUSTRATION 4-15 Note Disclosure of Intraperiod Tax Allocation

Income before income tax and extraordinary item	\$250,000
Income tax	<u>75,000</u>
Income before extraordinary item	175,000
Extraordinary item, less applicable income tax reduction (Note 1)	<u>70,000</u>
Net income	<u>\$105,000</u>

Note 1: During the year the Company suffered a major casualty loss of \$70,000, net of applicable income tax reduction of \$30,000.

### **Noncontrolling Interest**

A company may own less than 100% of the stock of another company, but it may own a large enough portion of the other company’s stock that it has **control** over the other company and must consolidate the other company’s financial results with its own financial results. In these cases, the other company is a subsidiary of the parent company but not a wholly-owned subsidiary. The noncontrolling interest in the other company is the portion of the equity in the subsidiary that is not owned by the parent.

Since the financial results of the parent and the subsidiary are consolidated, the net income of the consolidated entity includes some net income that does not belong to the parent because it belongs to the minority shareholder(s). When the parent prepares a consolidated income statement, the net income must be allocated between the controlling interest (the parent) and the noncontrolling interest (the minority shareholder[s]). The allocation is reported after net income on the income statement, as follows:

- Consolidated net income
- Less: Net income attributable to noncontrolling interest(s)
- = Net income attributable to shareowners of the parent



## Noncontrolling Interest

A company like **The Coca-Cola Company** owns substantial interests in other companies. Coca-Cola generally consolidates the financial results of these companies into its own financial statements. In these cases, Coca-Cola is referred to as the parent, and the other companies are referred to as subsidiaries. **Noncontrolling interest** is then the portion of equity (net assets) interest in a subsidiary not attributable to the parent company.

To illustrate, assume that Coca-Cola acquires 70 percent of the outstanding stock of Koch Company. Because Coca-Cola owns more than 50 percent of Koch, it consolidates Koch's financial results with its own. Consolidated net income is then allocated to the controlling (Coca-Cola) and noncontrolling shareholders' percentage of ownership in Koch. In other words, under this arrangement, the ownership of Koch is divided into two classes: (1) the majority interest represented by stockholders who own the controlling interest and (2) the noncontrolling interest (sometimes referred to as the minority interest) represented by stockholders who are not part of the controlling group. When Coca-Cola prepares a consolidated income statement, GAAP requires that net income be allocated to the controlling and noncontrolling interest. This allocation is reported at the bottom of the income statement, after net income.

An example of how Coca-Cola reports its noncontrolling interest is shown in Illustration 4-16.

**ILLUSTRATION 4-16**  
Presentation of  
Noncontrolling Interest



### The Coca-Cola Company

Consolidated net income	\$8,634
Less: Net income attributable to noncontrolling interests	<u>62</u>
Net income attributable to shareowners of The Coca-Cola Company	<u>\$8,572</u>

The noncontrolling interest amounts are not an expense or dividend, but are allocations of net income (loss) to the noncontrolling interest. [6]

**Summary of Various Income Items (Useful framework for determining the treatment of special items affecting the income statement).**

<b><u>Type of situation</u></b>	<b><u>Criteria</u></b>	<b><u>Examples</u></b>	<b><u>Placement on Income Statement</u></b>
Unusual gains or losses, not considered extraordinary	Material; character typical of the customary business activities; unusual or infrequent but not both.	Write-downs of receivables, inventories; adjustments of accrued contract prices; gains or losses from fluctuations of foreign exchange; gains or losses from sales of assets used in business.	Show in separate section above income before extraordinary items. Often reported in "Other revenues and gains" or "Other expenses and losses" section. <b>(Not shown net of tax.)</b>
Discontinued operations	Disposal of a component of a business for which the company can clearly distinguish operations and cash flows from the rest of the company's operations.	Sale by diversified company of major division that represents only activities in electronics industry. Food distributor that sells wholesale to supermarket chains and through fast-food restaurants decides to discontinue the division that sells to one of two classes of customers.	Show in separate section after continuing operations but before extraordinary items. <b>(Shown net of tax.)</b>
Extraordinary items	Material, and both unusual and infrequent (nonrecurring).	Gains or losses resulting from casualties, an expropriation, or a prohibition under a new law.	Show in separate section entitled "Extraordinary items." <b>(Shown net of tax.)</b>
Noncontrolling interest	Allocation of net income or loss divided between two classes: (1) the majority interest represented by the shareholders who own the controlling interest, and (2) the noncontrolling interest (often referred to as <i>minority interest</i> ).	Net profit (loss) attributable to noncontrolling shareholders	Report as a separate item below net income or loss as an allocation of the net income or loss <b>(not as an item of income or expense).</b>



## Retained Earnings Statement

Retained earnings is the link between a corporation's income statement and its balance sheet. Retained earnings is the total amount of corporate earnings that has not been returned to stockholders as dividends, and is a major component of stockholders' equity.<sup>(N)</sup>

Net income increases retained earnings. A net loss decreases retained earnings. Both cash and stock dividends decrease retained earnings.

### Adjustments of Beginning Retained Earnings

**Changes in accounting principles** -i.e., *retrospective adjustment*- (generally) and **prior period adjustments**-i.e., *relates to a correction of an error*- may increase or decrease retained earnings. Companies charge or credit these adjustments (net of tax) to the opening balance of retained earnings. This excludes the adjustments from the determination of net income for the current period. Companies may show retained earnings information in different ways. For example, some companies prepare a separate retained earnings statement, as Illustration 4-18 shows.<sup>(K)</sup>

### Take a Note:

Although not a required financial statement, whenever a corporation issues an income statement and a balance sheet, it may include a schedule that reconciles the beginning retained earnings balance with the ending retained earnings balance.<sup>(N)</sup>

Because the all-inclusive concept of net income is used in the income statement, generally the retained earnings statement includes only the addition of net income to and the deduction of dividends from the beginning retained earnings balance. If a corporation has any retrospective adjustments or prior period adjustments, these are also included in the retained earnings statement.<sup>(N)</sup>

### TIGER WOODS INC. RETAINED EARNINGS STATEMENT\* FOR THE YEAR ENDED DECEMBER 31, 2010

Retained earnings, January 1, as reported	\$1,050,000
Correction for understatement of net income in prior period (inventory error)	<u>50,000</u>
Retained earnings, January 1, as adjusted	1,100,000
Add: Net income	<u>360,000</u>
	1,460,000
Less: Cash dividends	\$100,000
Stock dividends	<u>200,000</u>
Retained earnings, December 31	<u><u>300,000</u></u>
	<u><u>\$1,160,000</u></u>

\*The two most common components of the statement of retained earnings are net income (loss) and dividends.<sup>(N)</sup>

The reconciliation of the beginning to the ending balance in retained earnings provides information about why net assets increased or decreased during the year. The association of **dividend** distributions with **net income** for the period indicates what management is doing with earnings: It may be "plowing back" into the business part or all of the earnings, distributing all current income, or distributing current income plus the accumulated earnings of prior years.<sup>(K)</sup>





### Restrictions of Retained Earnings

Companies often restrict retained earnings to comply with contractual requirements, board of directors' policy, or current necessity. Generally, companies disclose in the notes to the financial statements the amounts of restricted retained earnings. In some cases, companies transfer the amount of retained earnings restricted to an account titled **Appropriated Retained Earnings**. The retained earnings section may therefore report two separate amounts—(1) retained earnings free (unrestricted) and (2) retained earnings appropriated (restricted). The total of these two amounts equals the total retained earnings.

### Combined Statements

The statement of retained earnings may be issued as a separate schedule. It may also be included either in a schedule that summarizes the changes in stockholders' equity or as a supporting schedule on the income statement directly below net income. **Companies are required to disclose separately the changes in all the stockholders' equity accounts.** When these disclosures are made in the statement of changes in stockholders' equity, the statement of retained earnings usually is included as part of this statement. We recommend either a separate retained earnings statement or inclusion in the statement of changes in stockholders' equity. We do not recommend reconciling the beginning and ending balances of the retained earnings account directly on the income statement. This would add unnecessary information to an already-complex financial statement and might confuse users about the amount of income reported by a company.<sup>(N)</sup>

## Comprehensive Income

### A. Introduction

Companies generally include in income all revenues, expenses, and gains and losses recognized during the period. These items are classified within the income statement so that financial statement readers can better understand the significance of various components of net income. Changes in accounting principles and corrections of errors are excluded from the calculation of net income because their effects relate to prior periods.<sup>(K)</sup>

### B. Comprehensive Income

Comprehensive income is the change in equity (net assets) of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners.<sup>(Beck)</sup>

A company's comprehensive income consists of two parts:

$$\begin{array}{r} \text{Net income} \\ + \text{Other comprehensive income} \\ \hline \text{Comprehensive income} \end{array}$$

In recent years, there is increased use of fair values for measuring assets and liabilities. Furthermore, possible reporting of gains and losses related to changes in fair value have placed a strain on income reporting. Because fair values are continually changing, some argue that recognizing these gains and losses in net income is misleading. The FASB agrees and has identified a limited number of transactions that should be **recorded directly to stockholders equity**. One example is *unrealized gains and losses on available-for-sale securities*. These gains and losses are excluded from net income, thereby reducing volatility in net income due to fluctuations in fair value. At the same time disclosure of the potential gain or loss is provided.<sup>(K)</sup>





U.S. GAAP requires the disclosure of comprehensive income in the financial statements as well as a reconciliation between net income and comprehensive income.<sup>(HK)</sup>

### C. Net Income

Net income includes the following items:

1. Income from continuing operations
2. Discontinued operations
3. Extraordinary items

### D. Other Comprehensive Income

Other comprehensive income items are revenues, expenses, gains, and losses that are included in comprehensive income but excluded from net income under U.S. GAAP and/or IFRS.

Currently, there are **four items** of a company's other comprehensive income: **(a-t-h-p) you must memorize this:**

- ☐ • unrealized gains and losses on available-for-sale securities (i.e. increase (gain) or decrease (loss) in the fair value of its investments in available-for-sale securities).
- ☐ • translation gains and losses on foreign currency (translation adjustment from converting the financial statements of its foreign operations into U.S. dollars). and
- ☐ • unrealized gains and losses on certain hedging transactions ("derivative" financial instruments), and
- ☐ • adjustments related to pensions (i.e. certain pension plan gains, losses, and prior service cost adjustments).

Corrections of errors and changes in accounting principles are **not** considered other comprehensive income items.<sup>(K)</sup>

#### Take a Note:

The word "other" means these items are comprehensive income other than net income items.<sup>(HK)</sup>

Unrealized holding gains and losses are measured by the difference between recorded cost and fair value at year-end. They are excluded from earnings and reported in other comprehensive income.<sup>(GL)</sup>

But realized gains and losses on available-for-sale securities are components of net income.<sup>(GL)</sup>

Companies include above four items that bypass the income statement in a measure called comprehensive income. These four items may be shown as net of tax, or not shown net of tax. However, if they are not shown net of tax, income tax related to other comprehensive income must be disclosed on a separate line in the Statement of Comprehensive Income.<sup>(HK)</sup>

A company must report the accumulated balance of the items of other comprehensive income on the balance sheet as an element of owners' equity. It should be reported separately from the other owners' equity accounts.<sup>(HK)</sup>

Note: It is very possible for a company to have none of these items, and therefore this will not be an issue. In this case, the income statement simply becomes the Statement of Comprehensive Income. For the exam, you must be able to identify the items that are included as Other Comprehensive Income items.<sup>(HK)</sup>



For the above Hock said:” Net income is also comprehensive income, but the items in accumulated other comprehensive income must be added to net income in order to present all of the comprehensive income.”, but when we say “Net income is also comprehensive income” we mean it is a component of comprehensive income”.

**Comprehensive income** is the calculation of income that includes **all transactions of the company except for those transactions that are made with the owners of the company**.<sup>(HK)</sup>

Comprehensive income includes all changes in equity during a period **except** those resulting from investments by owners and distributions to owners. Comprehensive income, therefore, includes the following: all revenues and gains, expenses and losses reported in net income, and all gains and losses that bypass net income but affect stockholders’ equity. These items—non-owner changes in equity that bypass the income statement—are referred to as other comprehensive income.<sup>(K)</sup>

Comprehensive income includes all of the reported net income of a company. Net income flows to **Stockholders’ Equity** as retained earnings. Thus, net income is part of comprehensive income and part of Stockholders’ Equity as well.<sup>(HK)</sup>

### **E. Accumulated Other Comprehensive Income**

Accumulated other comprehensive income is a component of equity that includes the total of other comprehensive income for the period and previous periods. Other comprehensive income for the current period is "closed" to this account, which is reconciled each period similar to the manner in which retained earnings are reconciled.

Accumulated other comprehensive income is a component of **Stockholders’ Equity** (discussed later). The transactions in the accumulated other comprehensive income account do not affect the income statement, but they do affect Stockholders’ Equity. Since accumulated other comprehensive income is a balance sheet account, it is a permanent account, which means it is not closed out at the end of each fiscal year. Therefore, the balance in it continues to accumulate. Hence, it is called accumulated other comprehensive income. In practice, it is usually referred to simply as accumulated other comprehensive income, but the account could also carry a balance representing an accumulated loss. In that case, it would be presented on the balance sheet in the Equity section as accumulated other comprehensive loss.<sup>(HK)</sup>

Note: It is very possible for a company to have none of these items, and therefore this will not be an issue. In this case, the income statement simply becomes the Statement of Comprehensive Income. For the exam, you must be able to identify the items that are included as Other Comprehensive Income items.<sup>(HK)</sup>

### **PASS KEY**

At the end of each accounting period, all components of comprehensive income are closed to the balance sheet. Net income is closed to retained earnings and other comprehensive income is closed to accumulated other comprehensive income.

The FASB decided that companies **must** display the components of other comprehensive income in one of two ways:

- (1) a single continuous statement (one statement approach);
- (2) two separate, but consecutive statements of net income and other comprehensive income

Regardless of the format used, companies must add net income to other comprehensive income to arrive at comprehensive income. Companies are **not required** to report earnings per share information related to comprehensive income.<sup>(K)</sup>



To illustrate, assume that V. Gill Inc. reports the following information for 2010: sales revenue \$800,000; cost of goods sold \$600,000; operating expenses \$90,000; and an unrealized holding gain on available-for-sale securities of \$30,000, net of tax.

### One Statement Approach (Combined Statement of Comprehensive Income)

In this approach, the traditional net income is a subtotal, with total comprehensive income shown as a final total. The combined statement has the advantage of not requiring the creation of a new financial statement. However, burying net income as a subtotal on the statement is a disadvantage.<sup>(K)</sup> The comprehensive income reported on the face of its income statement.<sup>(N,s)</sup>

#### ILLUSTRATION 4-18 One-Statement Format:

V. GILL INC. STATEMENT OF COMPREHENSIVE INCOME FOR THE YEAR ENDED DECEMBER 31, 2010	
Sales revenue	\$800,000
Cost of goods sold	<u>600,000</u>
Gross profit	200,000
Operating expenses	<u>90,000</u>
Net income	\$110,000
Other comprehensive income	
Unrealized holding gain, net of tax	<u>30,000</u>
Comprehensive income	<u>\$140,000</u>

### Two- Statement Approach

Illustration 4-19 shows the two-income statement format based on the above information for V. Gill. Reporting comprehensive income in a separate statement indicates that the gains and losses identified as other comprehensive income have the same status as traditional gains and losses. Placing net income as the starting point in the comprehensive income statement highlights the relationship of the statement to the traditional income statement.

#### ILLUSTRATION 4-19 Two-Statement Format:

Comprehensive Income V. GILL INC. INCOME STATEMENT	
Sales revenue	\$800,000
Cost of goods sold	<u>600,000</u>
Gross profit	200,000
Operating expenses	<u>90,000</u>
Net income	<u>\$110,000</u>
V. GILL INC. COMPREHENSIVE INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 2010	
Net income	\$110,000
Other comprehensive income	
Unrealized holding gain, net of tax	<u>30,000</u>
Comprehensive income	<u>\$140,000</u>

Kieso (in previous edition) and Nikolai add another way to display the components of other comprehensive income “(3) as a part of the statement of stockholders’ equity.



A third approach reports other comprehensive income items in a statement of stockholders' equity (often referred to as statement of changes in stockholders' equity).

### Statement of Stockholders' Equity

In addition to a comprehensive income statement, companies also present a statement of stockholders' equity (often referred to as statement of changes in stockholders' equity).

This statement reports the changes in each stockholder's equity account and in total stockholders' equity during the year. Companies often prepare in columnar form the statement of stockholders' equity. In this format, they use columns for each account and for total stockholders' equity.

Stockholders' equity is generally comprised of contributed capital (common and preferred stock and additional paid-in capital), retained earnings and the accumulated balance in other comprehensive income. (K)

The following items are disclosed in this statement.

1. Contributions (issuances of shares) and distributions (dividends) to owners.
2. Reconciliation of the carrying amount of each component of stockholders' equity from the beginning to the end of the period.

To illustrate, assume the same information for V. Gill. The company had the following stockholder equity account balances at the beginning of 2010: Common Stock \$300,000; Retained Earnings \$50,000; and Accumulated Other Comprehensive Income \$60,000. No changes in the Common Stock account occurred during the year. Illustration 4-20 shows a statement of stockholders' equity for V. Gill.

ILLUSTRATION 4-20 Presentation of Comprehensive Income Items in Stockholders' Equity Statement

V. GILL INC. STATEMENT OF STOCKHOLDERS' EQUITY FOR THE YEAR ENDED DECEMBER 31, 2010					
	Total	Compre- hensive Income	Retained Earnings	Accumulated Other Compre- hensive Income	Common Stock
Beginning balance	\$410,000		\$ 50,000	\$60,000	\$300,000
Comprehensive income					
Net income	110,000	\$110,000	110,000		
Other comprehensive income					
Unrealized holding gain, net of tax	30,000	30,000		30,000	
Comprehensive income		\$140,000			
Ending balance	\$550,000		\$160,000	\$90,000	\$300,000

#### Take a Note:

Most companies use the statement of stockholders' equity approach to provide information related to other comprehensive income. Because many companies already provide a statement of stockholders' equity, adding additional columns to display information related to comprehensive income is not costly.

**Balance Sheet Presentation**

Regardless of the display format used, V. Gill reports the accumulated other comprehensive income of \$90,000 in the stockholders' equity section of the balance sheet as follows.

A company **must** report the accumulated balance of the items of other comprehensive income on the balance sheet as an **element of owners' equity**. It should be reported separately from the other owners' equity accounts.(HK)

**ILLUSTRATION 4-21 Presentation of Accumulated Other Comprehensive Income in the Balance Sheet**

V. GILL INC. BALANCE SHEET AS OF DECEMBER 31, 2010 (STOCKHOLDERS' EQUITY SECTION)	
Stockholders' equity	
Common stock	\$300,000
Retained earnings	160,000
Accumulated other comprehensive income	<u>90,000</u>
Total stockholders' equity	<u>\$550,000</u>

By providing information on the components of comprehensive income, as well as accumulated other comprehensive income, the company communicates information about all changes in net assets. With this information, users will better understand the quality of the company's earnings.(K)

We show the relationship of a company's comprehensive income (or loss) components and its "flow" into the company's balance sheet accounts in the following diagram:

	Beginning Retained Earnings		Beginning Accumulated Other Comprehensive Income	
+	Net Income (Loss)	+	Other Comprehensive Income (Loss)	= Comprehensive Income (Loss)
-	Dividends			
=	Ending Retained Earnings	=	Ending Accumulated Other Comprehensive Income	

Currently, about 83% of surveyed companies (2007) report their comprehensive income in the statement of changes in stockholders' equity, while 13% report it in a separate statement of comprehensive income and only 4% report it on a statement of income and comprehensive income.(N)



**PRESENTATION ORDER OF THE MAJOR COMPONENTS OF AN INCOME AND  
RETAINED EARNINGS STATEMENT**

**REPORTED ON INCOME STATEMENT**



- A. Income (or Loss) from Continuing Operations** (individual line items show "*gross of tax*", then total reported "*net of tax*")

Income from continuing operations includes operating activities (i.e., revenues, costs of goods sold, selling expenses, and administrative expenses), non-operating activities (e.g. other revenues and gains and other expenses and losses), and income taxes.



- B. Discontinued Operations** (*reported "net of tax"*)

Income from discontinued operations is presented net of tax.



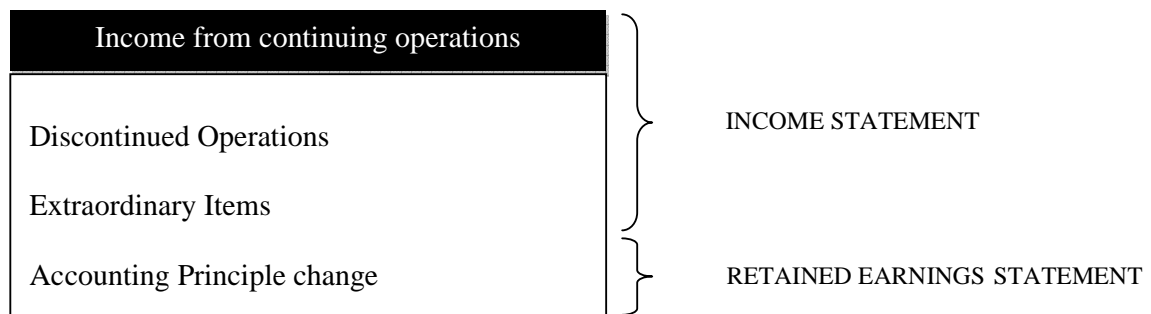
- C. Extraordinary Items** (*reported "net of tax"*)

Extraordinary items are presented net of tax and include items that are unusual in nature and infrequent in occurrence.

**REPORTED ON STATEMENT OF RETAINED EARNINGS**

- D. Cumulative Effect of Change in Accounting Principle** (*reported "net of tax"*)

The cumulative effect of a change in accounting principle is presented net of tax. It is the cumulative effect (calculated as of the beginning of the earliest period presented in the period of implementation of the new method) of a change from one acceptable method of accounting to another ("GAAP to GAAP") because the new method presents the financial information more fairly than the old method.



**Other Reporting Issues (not tested in part one)**

In this section, we discuss reporting issues related to accounting changes and errors, (2) retained earnings statement, and (3) comprehensive income.

**Accounting Changes and Errors**

Changes in accounting principle, changes in estimates, corrections of errors require unique reporting provisions.

**Changes in Accounting Principle**

Changes in accounting occur frequently in practice, because important events or conditions may be in dispute or uncertain at the statement date. One type of accounting change results when a company *adopts a different accounting principle*. Changes in accounting principle include a change in the method of inventory pricing from FIFO to average cost, or a change in accounting for construction contracts from the percentage-of-completion to the completed contract method.

**Take a Note**

Companies can change principles, but they must demonstrate that the newly adopted principle is preferable to the old one. Such changes result in lost consistency from period to period.<sup>(K)</sup>

A company recognizes a change in accounting principle by making a **retrospective adjustment** to the financial statements. Such an adjustment *recasts* the prior years' statements on a basis consistent with the newly adopted principle. The company records the **cumulative effect** of the change for prior periods as an adjustment to *beginning retained earnings* of the earliest year presented.

To illustrate, Gaubert Inc. decided in March 2010 to change from FIFO to weighted average inventory pricing. Gaubert's income before taxes, using the new weighted average method in 2010, is \$30,000. Illustration 4-10 (on page 146) presents the pretax income data for 2008 and 2009 for this example.<sup>(K)</sup>

Under this approach, the related existing asset or liability account balance (e.g., inventory) is recalculated. The new balance is determined assuming that the new accounting principle was applied during prior years. The account is debited or credited to bring its balance to the required amount, and the retained earnings account is credited or debited for the cumulative effect of the change in accounting principle. Any related impact on income taxes is also recorded. **The amount of the cumulative effect of the change in accounting principle is reported (net of taxes) directly after the beginning retained earnings amount on the company's retained earnings statement.** Because accounting for a change in accounting principle is similar to a correction of an error, we do not discuss it further here.

**ILLUSTRATION 4-10 Calculation of a Change in Accounting Principle**

<u>Year</u>	<u>FIFO</u>	<u>Weighted-Average Method</u>	<u>Excess of FIFO over Weighted-Average Method</u>
2008	\$40,000	\$35,000	\$5,000
2009	30,000	27,000	<u>3,000</u>
Total			<u>\$8,000</u>





Illustration 4-11 shows the information Gaubert presented in its comparative income statements, based on a 30 percent tax rate.

	<u>2010</u>	<u>2009</u>	<u>2008</u>
Income before taxes	\$30,000	\$27,000	\$35,000
Income tax	<u>9,000</u>	<u>8,100</u>	<u>10,500</u>
Net income	<u>\$21,000</u>	<u>\$18,900</u>	<u>\$24,500</u>

Thus, under the retrospective approach, the company recasts the prior years' income numbers under the newly adopted method. This approach thus preserves comparability across years.

### Changes in Accounting Estimates

Changes in accounting estimates are inherent in the accounting process. For example, companies estimate useful lives and salvage values of depreciable assets, uncollectible receivables, inventory obsolescence, and the number of periods expected to benefit from a particular expenditure.

Not infrequently, due to time, circumstances, or new information, even estimates originally made in good faith must be changed. A company accounts for such changes in estimates in the period of change if they affect only that period, or in the period of change and future periods if the change affects both.

To illustrate a change in estimate that affects only the period of change, assume that DuPage Materials Corp. consistently estimated its bad debt expense at 1 percent of credit sales. In 2010 however, DuPage determines that it must revise upward the estimate of bad debts for the current year's credit sales to 2 percent, or double the prior years' percentage. The 2 percent rate is necessary to reduce accounts receivable to net realizable value. Using 2 percent results in a bad debt charge of \$240,000, or double the amount using the 1 percent estimate for prior years, DuPage records the provision at December 31, 2010, as follows.

Bad Debt Expense	240,000	
Allowance for Doubtful Accounts		240,000

DuPage includes the entire change in estimate in 2010 income because the change does not affect future periods. Companies do not handle changes in estimate retrospectively. That is, such changes are **not carried back** to adjust prior years. **Changes in estimate are not considered errors or extraordinary items.**

### Corrections of Errors

Errors occur as a result of

- mathematical mistakes,
- mistakes in the application of accounting principles, or
- oversight or
- misuse of facts that existed at the time financial statements were prepared.
- the use of an accounting principle that is not generally accepted, or<sup>(N)</sup>
- fraud .<sup>(N)</sup>

In recent years, many companies have corrected for errors in their financial statements. The errors involved such items as improper reporting of revenue, accounting for stock options, allowances for receivables, inventories, and other provisions.





Companies must correct errors by making proper entries in the accounts and reporting the corrections in the financial statements. Corrections of errors are treated as prior period adjustments, similar to changes in accounting principles. Companies record a correction of an error in the year in which it is discovered. They report the error in the financial statements as an adjustment to the beginning balance of retained earnings. If a company prepares comparative financial statements, it should restate the prior statements for the effects of the error.<sup>(K)</sup>

A company is required to account for the correction of a material error as a prior period adjustment to its beginning retained earnings balance in the period that the accounts are corrected. **The asset or liability account in error at the beginning of the period is corrected, and the offsetting debit or credit amount is made directly to the retained earnings account.**<sup>(N)</sup>

To illustrate, in 2011, Hillsboro Co. determined that it incorrectly overstated its accounts receivable and sales revenue by \$100,000 in 2010. In 2011, Hillsboro makes the following entry to correct for this error (ignore income taxes).

Retained Earnings	100,000	
Accounts Receivable		100,000

Retained Earnings is debited because sales revenue, and therefore net income, was overstated in a prior period. Accounts Receivable is credited to reduce this overstated balance to the correct amount.

### Summary

The impact of *changes in accounting principles* and *errors corrections* are debited or credited directly to *retained earnings* for the amounts related to prior periods.

<u>Type of situation</u>	<u>Criteria</u>	<u>Examples</u>	<u>Placement on Income Statement</u>
Changes in accounting principle	Change from one generally accepted principle to another.	Change in the basis of inventory pricing from FIFO to average cost.	Recast prior years' income statements on the same basis as the newly adopted principle. <b>(Shown net of tax.)</b>
Changes in estimates	Normal, recurring corrections and adjustments.	Changes in the realizability of receivables and inventories; changes in estimated lives of equipment, intangible assets; changes in estimated liability for warranty costs, income taxes, and salary payments.	Show change only in the affected accounts. <b>(Not shown net of tax.)</b>
Corrections of errors	Mistake, misuse of facts.	Error in reporting income and expenses.	Treat as prior period adjustment; restate prior years' income statements to correct for



## **Content Specification Outlines**

### **1. Financial statements**

- a. Balance sheet
- b. Income statement
- c. Statement of changes in equity
- d. Statement of cash flows

## **Learning Outcome Statements**

For the balance sheet, income statement, statement of changes in equity, and the statement of cash flows, the candidate should be able to:

- a. identify the users of these financial statements and their needs
- b. demonstrate an understanding of the purposes and uses of each statement
- c. identify the major components and classifications of each statement
- d. identify the limitations of each financial statement
- e. identify how various financial transactions affect the elements of each of the financial statements and determine the proper classification of the transaction
- f. identify the basic disclosures related to each of the statements (footnotes, supplementary schedules, etc.)
- g. demonstrate an understanding of the relationship among the financial statements
- h. prepare a balance sheet, an income statement, a statement of changes in equity, and a statement of cash flows (indirect method)



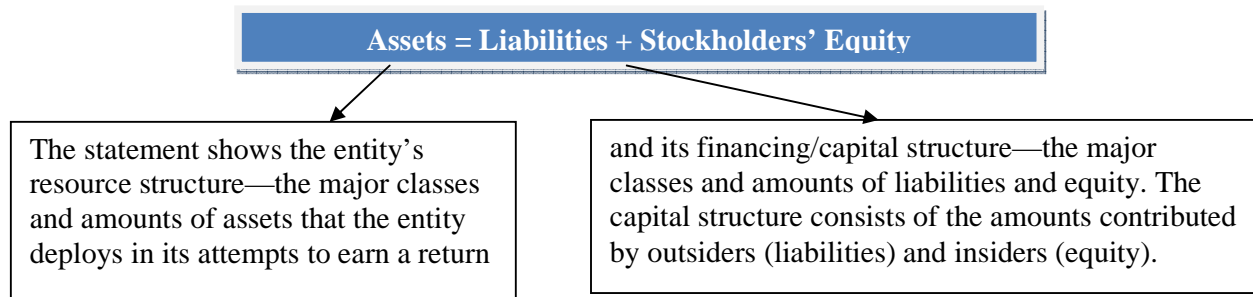
## Gleim Subunits

**1.2 Statement of Financial Position (Balance Sheet)**

The statement of financial position, also called the balance sheet, reports the amounts of **assets** (economic resources), **liabilities** (obligations), owners' **equity**, and their relationships at a **moment in time** (specific/particular date), such as at the end of the fiscal year. It helps users to assess liquidity, financial flexibility, and risk.<sup>(GL)</sup>

The statement reports the corporation's resource structure (i.e., major classes and amounts of assets) and its financial structure (i.e., major classes and amounts of liabilities and equity). It therefore helps in predicting the amounts, timing, and uncertainty of future cash flows.<sup>(K)</sup>

Its name evolved because the balance sheet is a detailed summary of the basic accounting equation (which must always remain in balance), the basic accounting equation presents a perfect balance between the entity's resources and its capital structure. :



The balance sheet is a picture of what the company owns and owes at a particular point in time (usually the end of a reporting period).<sup>(HK)</sup> The balance sheet presents assets, liabilities, and equity in what is called the **proprietary theory**. The proprietary theory means that net assets are viewed as belonging to the owner(s) or proprietor(s).

Balance sheet accounts are **permanent (real) accounts**. They are not closed out at the end of each accounting period but rather their balances are cumulative. They keep on accumulating transactions and changing with each transaction, year after year.

**Take a Note: *The balance sheet does not attempt to***

show the total **fair value of a company** and not intended to show the value of a business, together with other financial statements and other information, however, it provides information that is useful to external users who want to make their own estimates of the company's fair value.

More specifically, a company's balance sheet is **intended** to help external users (1) assess its liquidity, financial flexibility, and operating capability and (2) evaluate information about its income-producing performance during the period.

**ELEMENTS OF THE BALANCE SHEET**

**1 ASSETS.** Probable future economic benefits (or resources) obtained or controlled by a particular entity as a result of past transactions or events.

**2 LIABILITIES.** Probable future sacrifices of economic benefits (obligations) arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.

**3 EQUITY.** Residual interest in the assets of an entity that remains after deducting its liabilities. In a business enterprise, the equity is the ownership interest.

**Take a Note: Equity is affected not only by operations**

Equity is affected not only by operations but also by transactions with owners, such as dividends and contributions.

- 1) **Investments by owners** are increases in equity of a business entity. They result from transfers of something of value to increase ownership interests. Assets are the most commonly transferred item, but services also can be exchanged for equity interests.
- 2) **Distributions to owners** are decreases in equity. They result from transferring assets, providing services, or incurring liabilities. A distribution to owners decreases the ownership interest in the company.

Assets and liabilities are separated in the statement of financial position into **current** and **noncurrent** categories, companies then further divide these items into several subclassifications. Illustration below indicates the general format of balance sheet presentation.

<u>Assets</u>	<u>Liabilities and Owners' Equity</u>
Current assets	Current liabilities
Long-term investments	Long-term debt
Property, plant, & equipment	Owners' equity
Intangible assets	Capital stock
Other assets	Additional paid-in capital
	Retained earnings

<u>Assets</u>	<u>Liabilities</u>
Current assets	Current liabilities:
Cash	Accounts payable
Certain investments	Current notes payable
Accounts and notes receivable	Current maturities of noncurrent liabilities
Inventories	Noncurrent liabilities:
Prepaid expenses	Noncurrent notes payable
Noncurrent assets:	Bonds payable
Certain investments and funds	<u>Equity</u>
Property, plant, and equipment (PPE)	Investments by owners
Intangible assets	Retained earnings (income reinvested)
Other noncurrent assets	Accumulated other comprehensive income
	Noncontrolling interest in consolidated entity

**RECOGNITION IN THE BALANCE SHEET**

To be recognized, an item (and information about it) must meet the definition of an element, and be *measurable*, *relevant*, and *reliable*. Thus, to meet the objectives of a company's balance sheet—to provide relevant and reliable information to assess its liquidity, financial flexibility, and operating capability and to evaluate its income-producing performance during the period—the company must determine what, how, and where to disclose the “elements” of the balance sheet. That is, the company must complete a three-stage process:

1. Identification of what items meet the definitions of the elements
2. Measurement (valuation) of the elements
3. Reporting (classification) of the elements

**Define The Elements Of a Balance Sheet**

The elements of a balance sheet are the broad classes of items comprising it. The elements include assets (a corporation's economic resources), liabilities (are its present obligations), and stockholders' equity (residual interest in the assets).



### **Explain how to measure (value) the elements of a balance sheet**

There are two alternatives for measuring (valuing) the elements (assets and liabilities) of a balance sheet. These include: (1) historical cost and (2) fair value. The historical cost (historical proceeds) is the exchange price in the transaction when the asset was acquired (or the liability incurred). After acquisition, the historical cost may be reduced due to adjustments such as depreciation. The fair value is the price the company would receive to sell the asset (or transfer the liability). It may be measured by a quoted price for an identical asset (or liability), adjusted quoted price for a similar asset (or liability), or an unobservable value (e.g. present value).

### **Classify the assets of a balance sheet**

The assets of a balance sheet may be classified into five groups: (1) current assets, (2) long-term investments, (3) property, plant, and equipment, (4) intangible assets, and (5) other assets.

Classify the liabilities of a balance sheet. The liabilities of a balance sheet may be classified into three groups: (1) current liabilities, (2) long-term liabilities, and (3) other liabilities.

### **Report the stockholders' equity of a balance sheet**

The stockholders' equity of a balance sheet consists of contributed capital (capital stock and additional paid-in capital), retained earnings, and accumulated other comprehensive income.

## **Elements of the Balance Sheet**

Elements of the balance sheet include assets, liabilities, and stockholders' (or owners') equity.

### **Assets**

**Assets** are probable future economic benefits that have been obtained or are controlled by an entity as a result of past transactions or events. Thus, an asset is something that:

- arose from a past transaction,
- is presently owned by the company, and
- will provide a probable future economic benefit to the company.

Note that this definition encompasses three time periods: the past, the present and the future.

### **Liabilities**

**Liabilities** are probable future sacrifices of economic benefits due to present obligations of an entity to transfer assets or provide services in the future, resulting from past transactions or events. Thus, a liability is something that:

- arose from a past transaction,
- is presently owed by the company, and
- will lead to a probable future sacrifice of economic benefits by the company.

The definition for liabilities contains the same three time periods as are contained in the definition of assets—the past, the present and the future.

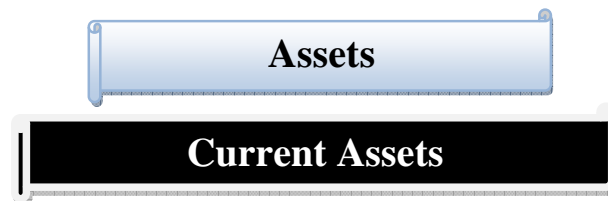
### **Equity**

**Equity** is net assets, or the residual (remaining) interest in the assets of an entity after deducting its liabilities from its assets. For a business entity, equity is the ownership interest.

**Classification and the operating cycle****Current and Noncurrent Classification of Assets and Liabilities**

On the balance sheet, assets and liabilities are classified as either **current** or **noncurrent**. Current assets and liabilities are short-term and noncurrent assets and liabilities are long-term, but the more correct terminology for both assets and liabilities is “current” and “noncurrent.” Whether an asset or liability is classified as current or noncurrent depends upon the time frame in which the asset or liability is expected to be settled (for liabilities) or converted into cash (for assets).

Note: The **operating cycle** is the average time between the acquisition of resources (or inventory) and the final receipt of cash from the sale of those assets.<sup>(tk)</sup> The cycle operates from cash through inventory, production, receivables, and back to cash. When several operating cycles occur within one year (which is generally the case for service companies), a company uses the one year period. If the operating cycle is more than one year, a company uses the longer period.<sup>(k)</sup>



Current assets are cash and other assets a company **expects to convert into cash**, sell, or consume either in one year or in the operating cycle, whichever is longer.<sup>(k)</sup> Current assets are assets that will be converted into cash or sold or consumed within 12 months or within one operating cycle if the operating cycle is longer than 12 months.<sup>(HK)</sup>

Therefore, an asset that will be converted into cash within 18 months may be classified as a current asset if the reporting company's operating cycle is 18 months long, but an asset that will be converted into cash within less than 12 months will always be classified as a current asset.

Current assets are presented in the balance sheet in order of liquidity. The **five major items** found in the current assets section, and their bases of valuation, are shown in Illustration below, these items usually are presented in the current asset section in the order of their **liquidity**:



<u>Item</u>	<u>Basis of Valuation</u>
Cash and cash equivalents	Fair value
Short-term investments	Generally, fair value
Receivables	Estimated amount collectible
Inventories	Lower of cost or market
Prepaid expenses	Cost

**Take a Note:**

A company does not report these five items as current assets if it does not expect to realize them in one year or in the operating cycle, whichever is longer. For example, a company excludes from the current assets section cash restricted for purposes other than payment of current obligations or for use in current operations. **Generally, if a company expects to convert an asset into cash or to use it to pay a current liability within a year or the operating cycle, whichever is longer, it classifies the asset as current.**



This rule, however, is subject to interpretation



A company classifies an **investment** in common stock as either a current asset or a noncurrent asset depending on **management's intent**. When it has small holdings of common stocks or bonds that it will hold long-term, it should not classify them as current.

Although a current asset is well defined, certain theoretical problems also develop. For example, how is including **prepaid expenses** in the current assets section justified? The rationale is that if a company did not pay these items in advance, it would instead need to use other current assets during the operating cycle. If we follow this logic to its ultimate conclusion, however, any asset previously purchased saves the use of current assets during the operating cycle and would be

Another problem occurs in the current-asset definition when a company consumes **plant assets** during the operating cycle. Conceptually, it seems that a company should place in the current assets section an amount equal to the current depreciation charge on the plant assets, because it will consume them in the next operating cycle. However, this conceptual problem is ignored. This example illustrates that the formal distinction made between some current and noncurrent assets is somewhat arbitrary.

### Major Categories of Current Assets

Current assets are perhaps the easiest of the various sections of the balance sheet to identify and include:

#### Cash & Cash equivalents

**Cash** is generally considered to consist of coins, currency undeposited checks, money orders and drafts, and demand deposits (monies available on demand at a financial institution)<sup>(K)</sup> i.e., cash includes cash on hand and readily available in checking and savings accounts.<sup>(N)</sup>

**Cash equivalents** are short-term **highly liquid investments** that will mature within three months or less i.e., convertible to known amounts of cash without a significant loss in value and have maturities of 3 months or less from the date of purchase.

Many companies also include "cash equivalents" with cash. Cash equivalents are **risk-free securities**, such as **money market funds** and **treasury bills** that will mature in three months or less from the date acquired by the holder. Temporary investments in marketable securities include debt and equity securities that are classified as "trading securities," "available-for-sale securities" that management intends to sell within one year or the normal operating cycle (whichever is longer), and "held-to-maturity" securities that will mature. Most companies use the caption "Cash and cash equivalents," and they indicate that this amount approximates fair value.<sup>(N)</sup>



A company must disclose any restrictions or commitments related to the availability of cash. If a company restricts cash for purposes other than current obligations, it excludes the cash from current assets.



**ILLUSTRATION 5-4**

Balance Sheet  
Presentation of  
Current and Noncurrent  
Restricted Cash

**Owens Corning, Inc.**

(in millions)

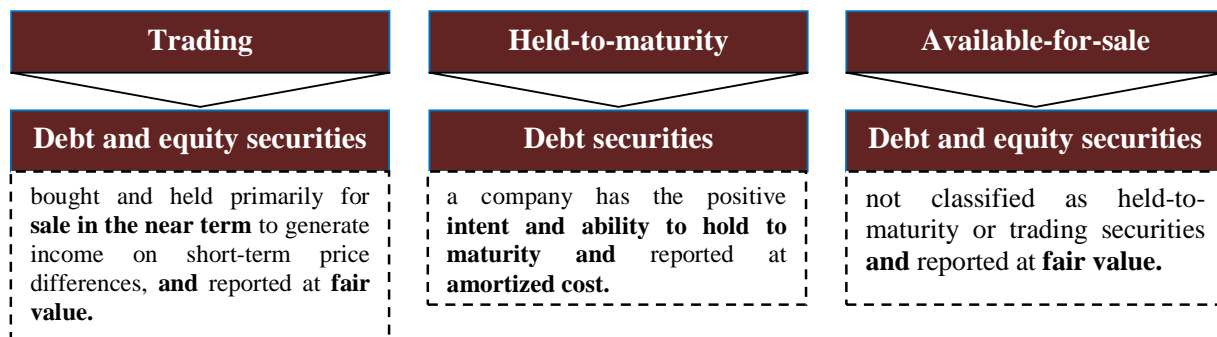
<u>Current assets</u>	
Cash and cash equivalents	\$ 70
Restricted securities—Fibreboard—current portion (Note 23)	900
<u>Other assets</u>	
Restricted securities—Fibreboard (Note 23)	938

**Note 23 (in part).** The Insurance Settlement funds are held in and invested by the Fibreboard Settlement Trust (the "Trust") and are available to satisfy Fibreboard's pending and future asbestos related liabilities. . . . The assets of the Trust are comprised of cash and marketable securities (collectively, the "Trust Assets") and are reflected on Owens Corning's consolidated balance sheet as restricted assets. These assets are reflected as current assets or other assets, with each category denoted "Restricted securities—Fibreboard."

**Short-Term Investments****Short-Term Investments maturing in less than one year**

Marketable securities purchased with temporarily idle cash that can be sold to meet current cash needs or investments maturing within one year or the operating cycle, if longer.<sup>(HK)</sup>

Companies group investments in debt and equity securities into three separate portfolios for valuation and reporting purposes:



A company should report trading securities (whether debt or equity) as **current assets**.

It classifies individual held-to-maturity and available-for-sale securities as **current** or **noncurrent** depending on the circumstances.<sup>(K)</sup>

Classified as current assets

Classified as non current

Marketable securities classified as available-for-sale or held-to-maturity are current assets if the securities are **considered working capital** that is available for current operations. An available-for-sale or held-to-maturity security classified as a current asset could thus have a maturity of anything up to the length of the firm's operating cycle, if management considers it **available for current operations**.

Alternatively, an available-for-sale or held-to-maturity security with a maturity of less than the length of the business's operating cycle might also be considered a non-current asset, **if management does not consider it to be available for current operations**.<sup>(HK)</sup>



**Intuit Inc.**  
(in thousands)Assets

Cash and cash equivalents	\$ 170,043
Short-term investments (Note 2)	1,036,758

**Note 2 (in part).** The following schedule summarizes the estimated fair value of our short-term investments (all available-for-sale):

Corporate notes	\$ 50,471
Municipal bonds	931,374
U.S. government securities	54,913

**ILLUSTRATION 5-5**Balance Sheet Presentation  
of Investments in  
Securities**Receivables****Types of Receivables**

Receivables include accounts receivable and notes receivable with short-term maturity dates.

Also include receivables from affiliates and officer and employee receivables.<sup>(HK)</sup>

**Short-term receivables** are listed at their estimated collectible amounts (**net realizable values**).<sup>(N)</sup>

A company should clearly identify any anticipated loss due to uncollectibles, the amount and nature of any nontrade receivables, and any receivables used as collateral.

Major categories of receivables should be shown in the balance sheet or the related notes. For receivables arising from unusual transactions (such as sale of property, or a loan to affiliates or employees), companies should separately classify these as long term, unless collection is expected within one year.

**Mack Trucks, Inc.**Current assets

Trade receivables	
Accounts receivable	\$102,212,000
Affiliated companies	1,157,000
Installment notes and contracts	625,000
Total	103,994,000
Less: Allowance for uncollectible accounts	8,194,000
Trade receivables—net	95,800,000
Receivables from unconsolidated financial subsidiaries	22,106,000

**ILLUSTRATION 5-6**Balance Sheet Presentation  
of Receivables**Inventories****Types of Inventories**

Raw materials, work-in-process and finished goods (goods on hand and available for

They are listed at their **historical cost** or **market value** (current/replacement cost), whichever is lower.

The **inventory costing method** (LIFO, FIFO, average cost) is disclosed parenthetically or in the related notes.

Take a note: damaged inventories commonly valued at **net realizable value**.<sup>(GL)</sup>



To reduce the detail on its balance sheet, a company might show a total inventory amount in current assets and include a schedule of the components in the notes to the financial statements.<sup>(N)</sup> A manufacturing concern (like Abbott Laboratories, shown in Illustration 5-7) also indicates the stage of completion of the inventories.

**Abbott Laboratories**

(in thousands)

Current assets	
Inventories	
Finished products	\$ 772,478
Work in process	338,818
Materials	384,148
Total inventories	1,495,444

**Note 1 (in part): Inventories.** Inventories are stated at the lower of cost (first-in, first-out basis) or market.

**ILLUSTRATION 5-7**  
Balance Sheet Presentation  
of Inventories, Showing  
Stage of Completion

### Prepaid Expenses

Amounts paid in advance for the use of assets or for services to be received at a future date. Examples prepayment for: rent, insurance policy, advertising, taxes, and office or operating supplies.

A company reports prepaid expenses at the amount of the **unexpired or unconsumed cost** i.e., are listed at the **historical cost of the remaining amounts**.<sup>(N)</sup>

Prepaid expenses are **not convertible to cash**, but they are classified as current assets *because they would have required the use of current assets during the coming operating cycle if they had not been prepaid*.<sup>(HK)</sup> A company includes prepaid expenses in current assets if it will receive benefits (usually services) within one year or the operating cycle, whichever is longer.<sup>(K)</sup> As we discussed earlier, these items are current assets *because if they had not already been paid, they would require the use of cash during the next year or the operating cycle*.

**ILLUSTRATION 5-9**  
Balance Sheet  
Presentation of Prepaid  
Expenses

**Hasbro, Inc.**

(in thousands of dollars)

Current assets	
Cash and cash equivalents	\$ 715,400
Accounts receivable, less allowances of \$27,700	556,287
Inventories	203,337
Prepaid expenses and other current assets	243,291
Total current assets	\$1,718,315

Also, even though a two-year prepayment of insurance would extend over more than an annual operating cycle, the payment is usually classified as a current asset because the amount is not material.<sup>(N)</sup>



## Noncurrent Assets

Noncurrent assets are assets that **will not be converted** into cash within one year or during the operating cycle if the operating cycle is longer than one year. <sup>(HK)</sup> Noncurrent assets are those not meeting the definition of current assets. <sup>(K)</sup>

They include:

- Long-term investments,
- Property, plant and equipment,
- Intangible long-term assets, and
- Other long-term assets

## Long-Term Investments

Why companies make investments?? for several reasons:

They may be interested

- in **appreciation of the investment** (the company expects the market value of the investment to increase),
- in **income from interest or dividends**,
- in **exercising control** over certain other companies as in the case of a subsidiary or a major supplier, and
- in using the investment for **specific future purposes** such as the acquisition of property, plant, and equipment for expansion.

**Take a Note: Investments classified as noncurrent based on management's intent, regardless of its marketability**

**Whether or not the investment is readily marketable**, if the company/management expects to hold the item for **more than one year** or the operating cycle, whichever is longer, it is classified as a **long-term (noncurrent)** investment. <sup>(N)</sup>

Companies expect to hold long-term investments for **many years**. They usually present them on the balance sheet just below "Current assets," in a separate section called "Investments." Realize that many securities classified as long-term investments are, in fact, **readily marketable**. But a company does not include them as current assets unless it **intends to convert them to cash in the short-term** that is, within a year or in the operating cycle, whichever is longer. As indicated earlier, securities classified as available-for-sale are reported at fair value, and held-to-maturity securities are reported at amortized cost. <sup>(K)</sup>

### Types of Long-term investments:

1. Investments in securities, such as bonds, common stock, or long-term notes.

Include:

- holdings of **available-for-sale debt and equity securities** that the company **does not intend to convert** into cash within one year or the normal operating cycle (if longer than a year). <sup>(N)</sup>
- investments in **debt securities (e.g., bonds) expected to be held to maturity**,
- **noncurrent notes receivable from unaffiliated companies**,
- long-term advances to unconsolidated affiliated companies, and
- financial instruments (such as options to buy stock) that are noncurrent. <sup>(N)</sup>



## 2. Investments in **tangible fixed assets not** currently used in operations

Such as:

- land held for speculation/or held for future use (being held for a future building site).<sup>(K) (HK,N)</sup>
- idle facilities or land held for future use.<sup>(HK)</sup> ,

## 3. Investments set aside in **special funds**

Such as:

- a sinking fund (Special funds established to retire bonds payable or preferred stock),
- pension fund, or
- plant expansion fund (Special funds established to acquire future facilities are included as long-term investments).<sup>(K,N)</sup>
- miscellaneous investments, including the cash surrender value of life insurance policies, should be listed in this section of the balance sheet.<sup>(N)</sup>

The cash surrender value of a life insurance policy is essentially the amount that the holder of the policy would get from the insurance company if the policy were cancelled. Some firms own life insurance policies on the lives of their key employees, and such insurance policies are assets of the corporation.<sup>(mc)</sup>

## 4. Investments in **nonconsolidated subsidiaries** or affiliated companies<sup>(K)</sup>

- made for the purpose of controlling or influencing the investee.<sup>(HK)</sup>

Motorola, Inc. reported its investments section, located between “Property, plant, and equipment” and “Other assets,” as shown in Illustration 5-10.



### Motorola, Inc. (in millions)

Investments	
Equity investments	\$ 872
Other investments	2,567
Fair value adjustment to available-for-sale securities	<u>2,487</u>
Total	\$5,926

**ILLUSTRATION 5-10**  
Balance Sheet Presentation  
of Long-Term Investments

## Measurement (valuation) of Investments

Investments are listed at their fair value, historical cost, or book value, depending on the type of investment. The method of valuation for each long-term investment should be disclosed either parenthetically or in the notes to the financial statements.<sup>(N)</sup>

### Long-Term Investments

Investment in held-to-maturity bonds	\$ 17,000	
Fund to retire long-term bonds payable	<u>17,400</u>	
Total long-term investments		34,400

**Property, Plant and Equipment (Fixed Assets)**

Property, plant, and equipment are tangible long-lived assets **used in the regular operations** of the business. These assets consist of **physical property** such as land, buildings, machinery, furniture, tools, and wasting resources (timberland, minerals). With the exception of land, a company either depreciates (e.g., buildings) or depletes (e.g., timberlands or oil reserves) these assets.<sup>(K)</sup>

When the fixed assets are purchased they are recorded at their cost, including costs such as installation costs needed to bring the asset to usable condition. The cost is then expensed over the life of the asset through depreciation.<sup>(HK)</sup>

**Measurement (valuation) of Fixed Assets**

Land is listed at its historical cost, while the remaining fixed assets are listed at their book values (historical cost less accumulated depreciation or depletion). A contra asset account, such as accumulated depreciation, usually is used to reduce fixed assets to their book values while still disclosing the historical cost. The method of depreciating the fixed assets is disclosed in the notes to the financial statements. In the case where the earning power of a fixed asset has been impaired, it is reported at a reduced fair value.<sup>(N)</sup>

Often these are called **fixed assets** because of their relative permanency in the company's operations. A merchandising company sometimes will title this section Property and Equipment because it does not have manufacturing (plant) facilities.<sup>(N)</sup>

Certain long-term lease contracts relating to leased property, plant, and equipment also are included in this section. Long-term leases of assets are a popular way for a lessee to acquire the rights to the use of the assets without a large cash down payment.<sup>(N)</sup>

**Examples of property, plant and equipment are:**

- land, buildings, machinery, furniture, equipment, and vehicles,
- leasehold improvements, or improvements made to leased property at the lessee's expense,
- assets that have been obtained through a capital lease, and
- wasting resources such as timberland and minerals.<sup>(HK)</sup>

Mattel, Inc. presented its property, plant, and equipment in its balance sheet as shown in Illustration 5-11.

**Mattel, Inc.**

Property, plant, and equipment	
Land	\$ 32,793,000
Buildings	257,430,000
Machinery and equipment	564,244,000
Capitalized leases	23,271,000
Leasehold improvements	74,988,000
	<u>952,726,000</u>
Less: Accumulated depreciation	<u>472,986,000</u>
	479,740,000
Tools, dies and molds, net	<u>168,092,000</u>
Property, plant, and equipment, net	647,832,000

**ILLUSTRATION 5-11**  
Balance Sheet Presentation  
of Property, Plant, and  
Equipment

A company discloses the basis it uses to value property, plant, and equipment; any liens against the properties; and accumulated depreciation—usually in the notes to the statements.<sup>(K)</sup>



### Intangible Assets

assets that do not have a physical substance but provide benefit to the firm over a period of time.<sup>(HK)</sup> Intangible assets are those **noncurrent economic resources** that a company **uses in its operations** but have no physical existence.<sup>(N)</sup> (lack physical substance and are not financial instruments).<sup>(K)</sup> They generally derive their value from the rights held by the company for their use, and they include patents, copyrights, franchises, goodwill, trademarks, trade names, franchises and customer lists.

Intangibles can represent significant economic resources, yet financial analysts often ignore them, because valuation is difficult.<sup>(K)</sup> *Discussed later*

### Other Noncurrent Assets/ deferred charges

The items included in the section “Other assets” vary widely in practice.<sup>(K)</sup> an “Other Assets” section occasionally is used to report miscellaneous assets that may not “fit” in one of the previous sections.<sup>(N)</sup>

Some include items such as

- long-term prepaid expenses (such as for rent or insurance),
- prepaid pension cost, and
- noncurrent receivables.

Other items that might be included are:

- assets in special funds,
- deferred income taxes,
- deferred tax assets,
- property held for sale, and
- restricted cash or securities.
- bond issue costs,
- assets of a component of the company that is being discontinued,
- advances to officers,
- idle fixed assets,
- cash from customers’ security deposits on returnable containers,
- assets leased to others, and
- assets temporarily restricted by foreign countries.

A company should limit this section to include only unusual items sufficiently different from assets included in specific categories.<sup>(K)</sup>

Classification within this section should be made judiciously. Many items that are listed in this section might be classified **correctly** in one of the previous sections.<sup>(N)</sup>





## Liabilities

Similar to assets, companies classify liabilities as current or long-term.

### Current Liabilities

Current liabilities are the obligations that a company reasonably expects to liquidate (settled) either through the use of current assets or the creation of other current liabilities<sup>.(K)</sup>, within one year or the normal operating cycle, whichever is longer.<sup>.(N)</sup>

#### Item

Trade payable  
Other payable  
Unearned revenue  
Other liabilities

Companies **do not** report current liabilities in any consistent order.

Several types of liabilities should be included as current liabilities:

#### Accounts/Notes Payable

1. **Payables/Obligations** for items (goods or services acquired) that are in the operating cycle. These include, for instance:

- Trade accounts payable/trade notes payable: for items entering into the operating cycle, e.g., for materials and supplies used in producing goods or services for sale.
- Other payables arising from operations: salaries payable<sup>.(N)</sup>, wages (salaries) payable, taxes payable, and so on.<sup>.(K)(HK)</sup>

#### Advance collections

2. **Collections received in advance** for the delivery of goods or performance of services, such as:

- unearned rent revenue or unearned subscriptions revenue<sup>.(K)</sup>
- For instance, obligations under short-term derivative financial instruments (such as options to sell stock)
- as well as unearned rent and unearned ticket sales. These latter items sometimes are referred to as short-term deferred (unearned) revenues<sup>.(N)</sup>

#### Other liabilities

3. **Other liabilities** (obligations) whose liquidation will take place within the operating cycle (will be paid within one year or the operating cycle<sup>.(N)</sup>), such as:

- the portion of long-term bonds to be paid in the current period or
- short-term obligations arising from purchase of equipment<sup>.(K)</sup>,
- short-term notes payable,
- interest payable,
- dividends payable,
- income taxes payable and other accruals, and
- the estimated liability for short-term product warranties<sup>.(N)</sup>
- agency collections such as employee tax withholdings and sales taxes, where the company acts as agent for another party (the government) and is obligated to remit the payments,
- obligations that, according to their terms, are due on demand such as demand notes, short-term (30-, 60-, 90-day) notes;
- long-term obligations callable at the balance sheet date due to some violation by the company such as a violation of a loan covenant<sup>.(HK)</sup>
- Payments required under sinking-fund provisions
- Payments on the current portion of serial bonds or other noncurrent debt.



A covenant is a condition or a requirement in a loan agreement or in a bond indenture. (A bond indenture is the legal, binding contract between a bond issuer, the borrower, and the bondholders, the lenders.) Covenants may restrict the actions of the borrower or require that they meet certain requirements such as maintaining certain financial statement ratios. If the borrower fails to meet the requirements of the loan agreement, the loan becomes in default, just as if the borrower had failed to make scheduled loan payments, and the full principal and any accrued interest becomes immediately due and payable.<sup>(HK)</sup>

### Current liabilities do not include the following:

- Debts to be paid by funds that are in accounts classified as noncurrent, and
- The portion of a short-term obligation that is **intended** to be refinanced by a long-term obligation. In order to classify such a current liability as a noncurrent liability, however,
  - the company must have demonstrated the ability to refinance the obligation as a noncurrent liability.
  - having a commitment from a bank for long-term financing of the obligation is an example of a way to demonstrate the ability to refinance it.<sup>(HK)</sup> This obligation is not a current liability because it will not require the use of current assets to satisfy the debt.<sup>(N)</sup>

### Take a Note:

Companies **do not** report current liabilities in any consistent order. In general, though, companies most commonly list notes payable, accounts payable, or short-term debt as the first item. Income taxes payable, current maturities of long-term debt, or other current liabilities are commonly listed last. For example, see Halliburton Company's current liabilities section in Illustration 5-13.



#### Halliburton Company

(in millions)

Current liabilities	
Short-term notes payable	\$1,570
Accounts payable	782
Accrued employee compensation and benefits	267
Unearned revenues	386
Income taxes payable	113
Accrued special charges	6
Current maturities of long-term debt	8
Other current liabilities	694
Total current liabilities	3,826

**ILLUSTRATION 5-13**  
Balance Sheet Presentation  
of Current Liabilities

If the amounts are material, companies classify income taxes and other accrued items separately. A company should fully describe in the notes any information about a secured liability—for example, stock held as collateral on notes payable—to identify the assets providing the security.<sup>(K)</sup>

### Working Capital

The working capital of a company is the financial resources it uses during its operating cycle. Working capital is the excess of a company's current assets over its current liabilities (or sometimes net working capital).<sup>(K)</sup> Although a company **seldom** computes its working capital on the balance sheet nor disclose on the balance sheet an amount for working capital, it is often used by creditors and others as an indicator of the short-run liquidity of the company.<sup>(N)(K)</sup>

Working capital represents the net amount of a company's relatively liquid resources. That is, it is the liquidity buffer available to meet the financial demands of the operating cycle.<sup>(K)</sup>

To determine the actual liquidity and availability of working capital to meet current obligations, however, requires analysis of the composition of the current assets and their nearness to cash.<sup>(K)</sup>



## Long-Term (Noncurrent) Liabilities

Long-term liabilities are obligations that a company does **not** reasonably expect to liquidate (settled) within the normal operating cycle.<sup>(K)</sup> Long-term liabilities are those obligations of a company that it does **not** expect to liquidate using current assets or creating current liabilities within one year or the normal operating cycle (whichever is longer).<sup>(N)</sup> Instead, it expects to pay them at some date beyond that time.<sup>(K)</sup> Long-term liabilities may be called **noncurrent liabilities**. Many of these obligations may be outstanding for several years.<sup>(N)</sup>

### Item

Noncurrent notes and bonds  
Liabilities under capital leases  
Most postretirement benefit obligations  
Deferred tax liabilities arising from interperiod tax allocation  
Obligations under product or service warranty agreements  
Advances for noncurrent commitments to provide goods or services  
Deferred revenue

### **Take a note:**

Companies classify long-term liabilities that mature within the current operating cycle as current liabilities if payment of the obligation requires the use of current assets.

### **Generally, long-term liabilities are of three types:**

#### **1. Obligations arising from specific financing situations**

such as:

- the issuance of bonds,
- (capital) long-term lease obligations,
- mortgages payable,<sup>(N)</sup> and
- long-term notes payable.<sup>(K)</sup>

#### **2. Obligations arising from the ordinary operations of the company**

such as:

- pension obligations (accrued pension cost (i.e., obligation for future pension payments) and
- deferred income tax liabilities.

#### **3. Obligations that depend on the occurrence or non-occurrence of one or more future events to confirm the amount payable, or the payee, or the date payable**

such as:

- service or product warranties (estimated liabilities from long-term warranties) and other contingencies.
- obligations under noncurrent financial instruments (e.g., options to sell stock),
- Advances for long-term commitments to provide goods and services,
- Long-term deferred revenue.<sup>(HK)</sup>

### **Disclosure related to long-term liabilities**

Companies generally provide a great deal of supplementary disclosure for long term liabilities, because most long-term debt is subject to various covenants and restrictions for the protection of lenders.<sup>(K)</sup>

It is desirable to report any premium or discount separately as an addition to or subtraction from the bonds payable. Companies frequently describe the terms of all long-term liability agreements (including maturity date or dates, rates of interest, nature of obligation, and any security pledged to



support the debt) in notes to the financial statements. Illustration 5-14 provides an example of this, taken from an excerpt from The Great Atlantic & Pacific Tea Company's financials.<sup>(N)</sup>

**ILLUSTRATION 5-14**

Balance Sheet  
Presentation of  
Long-Term Debt

**The Great Atlantic & Pacific Tea Company, Inc.**

Total current liabilities	\$978,109,000
<b>Long-term debt (See note)</b>	<b>254,312,000</b>
Obligations under capital leases	252,618,000
Deferred income taxes	57,167,000
Other non-current liabilities	127,321,000
<b>Note: Indebtedness.</b> Debt consists of:	
9.5% senior notes, due in annual installments of \$10,000,000	\$ 40,000,000
Mortgages and other notes due through 2011 (average interest rate of 9.9%)	107,604,000
Bank borrowings at 9.7%	67,225,000
Commercial paper at 9.4%	100,102,000
	314,931,000
Less: Current portion	(60,619,000)
Total long-term debt	<b>\$254,312,000</b>

**Long-term bonds**

To finance its activities, a corporation may issue long-term bonds (sometimes called debentures or notes). A bond is a written promise to repay a specific amount (its face value) at some future maturity date. Nearly all bonds also pay a specified interest rate (either semiannually or annually) that may vary from company to company. Many bonds sell in a bond market similar to that of a stock market. Frequently, a corporation may issue a bond at more or less than its face value. This occurs when the bond pays a stated interest rate greater or less than the yield rate investors can earn elsewhere on a similar security, making it more or less valuable. When a bond is issued for **more than** its face value, it is sold at a *premium*; when it is issued for **less**, it is sold at a *discount*. At the time of sale, the Bonds Payable account is recorded at the **face value of the bond**, and an *adjunct account* called Premium on Bonds Payable (or a *contra* account called Discount on Bonds Payable) is used to record the amount by which the selling price is greater than (or less than) the face value. Then, each period, this premium (or discount) is amortized as an adjustment to interest expense (generally by use of a present value approach), and at the maturity date only the face value of the bonds payable remains. Whenever a balance sheet is prepared, the remaining premium is added to (or the discount is subtracted from) the face value of the bonds payable to determine the book value. **Most long-term liabilities are reported at their present value**, but some are listed at cost. Any applicable interest rates, maturity values, and other provisions are disclosed parenthetically on the balance sheet or in the notes to the financial statements.<sup>(N)</sup>

**Long-Term Liabilities**

Bonds payable (10%, due 2023)	\$ 90,000	
Less: Unamortized bond discount	(8,200)	\$ 81,800
Mortgage payable (12%, due 2012–2015)		52,600
Accrued pension cost		34,700
Total long-term liabilities		169,100

**Other Liabilities**

A final section sometimes is used to report miscellaneous liabilities. This section might include items such as deferred tax liabilities, obligations of a component of the company that is being discontinued, and long-term advances from customers. As in the case of other assets, this category should be used judiciously.<sup>(N)</sup>

## Owners' Equity (Stockholders' Equity) Equity = assets (-) liabilities

Stockholders' equity is the **residual interest** of the stockholders in the assets of the corporation.<sup>(N)</sup> Equity is the portion of the company's assets owned by and owed to the owners. If the company were to be liquidated, equity represents the amount that would theoretically be distributable to the owners.<sup>(HK)</sup> Equity is the remaining balance of assets after the subtraction of all liabilities.

Items (elements of a corporation's equity)

### -Contributed capital

-Capital stock

\*Par value of common and preferred stock issued

- Additional paid-in capital

### -Retained earnings

### -Accumulated other comprehensive income items

-Treasury stock (reduction of equity)

-Noncontrolling interest

## Contributed Capital

### **The concept of Legal Capital**

The owners of a corporation hold shares of stock in that corporation. A stockholder may acquire shares directly from the corporation or by purchasing them on the stock market from another investor. The corporation's balance sheet is affected only in the first case. Most state laws protecting stockholders and creditors require a certain amount of *legal capital*. **Legal capital is the minimum amount of stockholders' equity that the corporation may not distribute as dividends**; it is one element of the total amount of contributed capital. Accounting for contributed capital follows these legal requirements.

The corporate charter includes the number of shares that a corporation is legally authorized to issue, as well as the types and characteristics of its capital stock. **Common stock** is the most prevalent type of capital stock. Each of these types of stock typically sells on a stock market, which establishes its market value per share. Based upon state laws, a corporation may issue (1) par value, (2) stated value, or (3) no-par (no stated value) capital stock. Legally, capital stock may be required to carry a par value or a stated value. Par value or stated value refers to a specific dollar amount per share that is printed on the stock certificate.<sup>(N)</sup>

## Contributed Capital

Contributed capital frequently is separated into two components:

### Capital Stock

The par or stated value of the shares issued relating to the legal capital, corporations may issue two types of capital stock:

#### Common Stock

Carries the right to vote at the annual stockholders' meeting and to share in residual profits.

#### Preferred Stock

Has different ownership features (which some investors consider more attractive) from common stock, including the first right to a specified dividend, if one is paid.

### Additional paid-in capital

or the excess of amounts contributed by owners from the sale of shares over and above the par or stated value of the shares issued.



TH

## Retained Earnings/Profits (corporation's undistributed earnings).

Retained earnings is the total amount of corporate accumulated net income that has not been distributed to stockholders as dividends. A corporation may retain the assets generated from this net income to use in its daily operations, to maintain its productive facilities, or for growth.

The Retained Earnings account balance is an **addition** in stockholders' equity. A **negative (debit) retained earnings** balance (due to cumulative net losses and dividends exceeding cumulative net income), called a *deficit*, is subtracted in stockholders' equity.

### Retained Earnings Sections

- Un-appropriated retained earnings
- Appropriated retained earnings

Sometimes a company *restricts* or *appropriates* a portion of retained earnings to indicate that it cannot be reduced by the distribution of dividends. This may occur as a result of a legal or contractual requirement. Usually, a company discloses such a restriction in the notes to its financial statements.<sup>(N)</sup>

The appropriation of retained earnings is a transfer from one retained earnings account to another.

The only practical effect is to decrease the amount of retained earnings available for dividends. An appropriation of retained earnings is purely for disclosure purposes. <sup>(GL)</sup>

The appropriation of retained earnings essentially has **no effect** on any aspect of the financial records. An appropriation is intended solely to *disclose* to the readers of financial statements that the company has no intention to distribute a portion of retained earnings to shareholders as dividends. An appropriation is most commonly recorded by means of a footnote to the financial statements. If journal entries are recorded, the effect is to increase one retained earnings account while simultaneously decreasing another retained earnings account, with **no net effect on total retained earnings**. <sup>(GL)</sup>

### Take a note:

In any event, a retained earnings balance has no relationship to the cash that is available for dividends. The resources generated by net income are invested in all assets.

## Accumulated Other Comprehensive Income

A company is required to report its total comprehensive income for the accounting period. Comprehensive income includes both *net income* & "*other comprehensive income*."

Accumulated other comprehensive income items (not included in net income), or specific items that are not included in the income statement but are included in equity and do adjust the balance of equity, even though they do not flow to equity by means of the income statement as retained earnings do.

**Other comprehensive income (loss) may include four items: (A-T-H-P) you must memorize this:**

A

Unrealized gains and losses on aavailable-for-sale securities (i.e. increase (gain) or decrease (loss) in the fair value of its investments in available-for-sale securities).

T

Translation gains and losses on foreign currency (translation adjustment from converting the financial statements of its foreign operations into U.S. dollars). and

H

Unrealized gains and losses on certain **h**edging transactions ("derivative" financial instruments), and

P

Adjustments related to pensions (i.e. certain pension plan gains, losses, and prior service cost adjustments). <sup>(N)</sup>

ed by



A corporation includes its total net income earned to date in its retained earnings amount reported in stockholders' equity. The corporation includes its other comprehensive income (or loss) accumulated to date in its accumulated other comprehensive income (or loss) amount reported in stockholders' equity. If a corporation has more than one item of other comprehensive income, it has a choice.

- It may report the amount of accumulated other comprehensive income for each item in stockholders' equity. Or,
- it may report the total amount of accumulated other comprehensive income for all the items in stockholders' equity. If the corporation uses this approach, it must disclose the amounts for each of the items in the notes to its financial statements. <sup>(N)</sup>

**Treasury Stock**, or the amount of shares repurchased (a contra-equity account that reduces equity on the balance sheet). Note: When a corporation repurchases shares of its own stock from the market, the repurchased shares are called treasury shares or treasury stock. Treasury shares purchased reduce owners' equity, because those shares are no longer outstanding.

**Noncontrolling interest** (minority interest), or a portion of the equity of subsidiaries that the reporting entity owns but does not own wholly.

### **Major Note Disclosures**

The first footnote accompanying any set of complete financial statements is generally one describing significant accounting policies, such as the use of estimates and rules for revenue recognition.

Generally footnote disclosures and schedules specifically related to the balance sheet include:

- Investment securities
- Property, plant, and equipment holdings
- Maturity patterns of bond issues
- Significant uncertainties, such as pending litigation
- Details of capital stock issues

### **A. Summary of Significant Accounting Policies**

Both U . S. GAAP and IFRS require that a description of all significant policies be included as an integral part of the financial statements. The preferred presentation is to include the "*Summary of Significant Accounting Policies*" as the first or second note to the financial statements. Policies presented in other notes should not be duplicated.

#### **1 . Identify and describe:**

- a. Measurement bases used in preparing the financial statements
- b. Accounting principles and methods
- c. Criteria
- d . Policies
- e. Pricing

#### **2. Accounting policies commonly described in this footnote:**

- a. Basis of consolidation
- b. Depreciation methods
- c. Amortization of intangibles
- d. Inventory pricing
- e. Accounting for recognition of profit on long-term construction contracts
- f. Recognition of revenue from franchising or leasing operation

### **B. Remaining Notes to the Financial Statements**



The remaining notes contain all other information relevant to decision makers (e.g., investors, creditors, etc.) These notes are used to disclose facts not presented in either the body of the financial statements or in the "Summary of Significant Accounting Policies." Examples of relevant note information include the following:

- 1 . Changes in stockholders' equity including capital stock, paid-in capital, retained earnings, treasury stock, stock dividends and other capital changes;
- 2 . Required marketable securities disclosure including carrying value and gross unrealized gains and losses;
3. Contingency losses;
4. Contractual obligations, including restrictions on specific assets or liabilities;  
    \*Off-balance-sheet financing- operating lease
5. Pension plan description; and
- 6 . Post-balance sheet disclosures of certain events that occurred before the financial statements were issued.

### **C. Related Party Disclosures**

Both U.S. GAAP and I F RS require the disclosure of related party transactions.

### **D. Disclosure of Risks and Uncertainties (U. S. GAAP)**

U.S. GAAP requires the disclosure of risks and uncertainties existing at the date(s) of the financial statements in the following areas:

- 1 . Nature of Operations
2. Use of Estimates i n the Preparation of Financial Statements
3. Certain Significant Estimates



**USEFULNESS OF THE BALANCE SHEET**

By providing information on assets, liabilities, and stockholders' equity, **the balance sheet provides a basis for:**

- computing rates of return and
- evaluating the capital structure of the enterprise.<sup>(K)</sup> and
- predicting a company's future cash flows.<sup>(HK)</sup>

More specifically, a company's balance sheet is intended to help external users assess a company's risk and future cash flows, liquidity, financial flexibility, solvency, operating capability, evaluate income-producing performance during a period.

The balance sheet **does not** attempt to show the total fair value of a company.

Together with other financial statements and other information, however, it provides information that is useful to external users who want to make their **own** estimates of the **company's fair value**.

**More specifically, a company's balance sheet is intended to help external users assess:**

#### assess a company's risk and future cash

**Risk** refers to the unpredictability of future events, transactions and circumstances that can affect the company's cash flows and financial results.<sup>(HK)</sup>

Analysts also use information in the balance sheet to assess a company's risk and future cash flows. In this regard, analysts use the balance sheet to assess a company's liquidity, solvency, and financial flexibility.<sup>(K)</sup>

However, a statement of financial position can provide only a partial picture of either liquidity or financial flexibility unless it is used in conjunction with at least a statement of cash flows. The statement of financial position can also be used in financial statement analysis to assess the company's ability to pay its debts when due and its ability to distribute cash to its investors to provide them an adequate rate of return.<sup>(HK)</sup>

#### assess liquidity

**Liquidity** describes "the amount of time that is expected to elapse until an asset is realized or otherwise converted into cash or until a liability has to be paid."<sup>(K)</sup> The greater a company's liquidity is, the lower its risk of failure.<sup>(HK)</sup>

**Liquidity** refers to how quickly a company can convert an asset into cash to pay its bills. That is, liquidity relates to the "nearness to cash" of a company's economic resources. Liquidity is also one aspect of a company's *financial flexibility*.<sup>(N)</sup>

Creditors are interested in short-term liquidity ratios, such as the ratio of cash (or near cash) to short-term liabilities. These ratios indicate whether a company, like Amazon, will have the resources to pay its current and maturing obligations. Similarly, stockholders assess liquidity to evaluate the possibility of future cash dividends or the buyback of shares. In general, the greater Amazon's liquidity, the lower its risk of failure.<sup>(K)</sup>

#### assess financial flexibility

Liquidity and solvency affect a company's **financial flexibility**, which measures the "ability of an enterprise to take effective actions to alter the amounts and timing of cash flows so it can respond to unexpected needs and opportunities."<sup>(K)</sup> i.e., the ability of a company to use its financial resources to adapt to change.<sup>(N)</sup>



For example, a company may become so loaded with debt- so financially inflexible- that it has little or no sources of cash to finance expansion or to pay off maturing debt. A company with a high degree of financial flexibility is better able to survive bad times, to recover from unexpected setbacks, and to take advantage of profitable and unexpected investment opportunities. Generally, the greater an enterprise's financial flexibility, the lower its risk of failure.<sup>(K)</sup>

Adaptation may be thought of as being "offensive" or "defensive." A company uses offensive adaptation to take advantage of an unexpected new business opportunity, while it uses defensive adaptation to react to a negative business event. Financial flexibility may come from a quick access to the cash generated from more "liquid" economic resources. But liquidity is only part of financial flexibility. A company's financial flexibility comes from its ability to obtain enough net cash inflows from operations, from additional capital contributed by investors or long-term creditors, or from liquidating long-term economic resources without disrupting continuing operations. Information about a company's financial flexibility is important to external users in assessing the uncertainty of its future cash flows.<sup>(N)</sup>

#### assess solvency

**Solvency** refers to the ability of a company to pay its debts (obligations) as they mature. For example, when a company carries a high level of long-term debt relative to assets, it has **lower solvency** than a similar company with a low level of long-term debt. Companies with higher debt are relatively more risky because they will need more of their assets to meet their fixed obligations (interest and principal payments).<sup>(K)</sup>

#### assess the operating capability

**Operating capability** refers to the ability of a company to maintain a given physical level of operations. This level may be indicated by the quantity of goods or services the company produced in a given period (i.e., inventory) or by the physical capacity of its operating assets (i.e., property, plant, and equipment) used to produce the goods or services. Information about a company's operating capability may be helpful to external users in understanding its performance and predicting future changes in its volume of activity and related cash flows.<sup>(N)</sup>

#### evaluate income-producing performance during a period

A company's balance sheet provides a basis for evaluating its **income-producing performance** during a period. Therefore, a company's capital is important. The capital (or net assets) of a company is its economic resources (assets) less its economic obligations (liabilities), or owners' equity. For a corporation, the stockholders' equity is the capital.<sup>(N)</sup>

The management of the corporation uses this capital in fulfilling its responsibilities to the corporate stockholders. When a stockholder invests in a corporation, the stockholder is interested in a return of investment as well as a return on investment. To provide for a return of investment, the corporation's stockholders' equity (capital) must be maintained; this is referred to as **capital maintenance**.<sup>(N)</sup> The basic financial statements are prepared using the concept of financial capital maintenance. A return on financial capital results only if the financial (money) amount of net assets at the **end** of the period exceeds the amount at the **beginning**.<sup>(GL)</sup> Once this capital is maintained, any income of the corporation is an increase in stockholders' equity. This increase is the basis for providing a return on investment to stockholders. Dividends are a return on investment, as is market price appreciation on the stock. Many investors prefer market price appreciation to dividends. Information about a corporation's capital is important in assessing its profitability and its ability to provide a return on investment.<sup>(N)</sup>

**Inclusion of information on capital maintenance is a fundamental approach to financial reporting, not a limitation** (SFAC 5).





## **LIMITATIONS OF THE BALANCE SHEET**

A balance sheet reports a company's financial position, but it does not report the company's value, for the following reasons:

- The use of historical cost for valuing assets and liabilities.
- The use of estimates in the determination of certain items.
- The balance sheet necessarily **omits many items that are of financial value** but that a company cannot record objectively.
- Most liabilities are valued at the present value of cash flows discounted at the rate **that was current** when the liability was incurred, not at the present value of cash flows discounted at the current **market interest rate**.
- The balance sheet shows a company's financial position at a **single point in time**; accounts may vary significantly a few days before or after the publication of the balance sheet.

1. Most assets and liabilities are reported at **historical cost**. As a result, the information provided in the balance sheet is often criticized for **not reporting a more relevant fair value**.<sup>(K)</sup> For example, property, plant and equipment are reported on the balance sheet at their historical cost minus accumulated depreciation, although the assets' value in use may be significantly greater.<sup>(HK)</sup>

Even those assets reported at their current fair values may not always faithfully represent what a company could sell those items for on an open market.<sup>(GL)</sup>

2. Companies use **judgments and estimates** to determine many of the items reported in the balance sheet. For example, in its balance sheet, Dell estimates the amount of receivables that it will collect, the useful life of its warehouses, and the number of computers that will be returned under warranty.<sup>(K)</sup>

3. Exclusion of some economic resources and obligations.

The balance sheet necessarily **omits many items that are of financial value** but that a company cannot record objectively. Examples of these assets include the company's employees, or its human resources, its processes and procedures, and its competitive advantages. For example, the knowledge and skill of Intel employees in developing new computer chips are arguably the company's most significant asset. However, because Intel cannot reliably measure the value of its employees and other intangible assets (such as customer base, research superiority, and reputation), it does not recognize these items in the balance sheet. Similarly, many liabilities are reported in an "off-balance-sheet" manner, if at all.<sup>(K)</sup> not all assets and liabilities are included in the balance sheet; for example, certain contingencies and pension obligations are not included.<sup>(GL)</sup>

4. Most liabilities are valued at the present value of cash flows discounted at the rate that was current when the liability was incurred, not at the present value of cash flows discounted at the current market interest rate. If market interest rates increase, a liability that carries a fixed interest rate that is below market increases in its value to the company. If market rates decrease, a liability that is payable at a fixed rate that is higher than the market interest rate sustains a loss in value. Neither of these changes in values is recognized on the balance sheet.<sup>(HK)</sup>

Fair value is increasingly being used to measure items presented on the balance sheet. Furthermore, many items such as derivatives that previously were not reported on the balance sheet at all are now being reported at fair value.<sup>(HK)</sup>

5. The balance sheet shows a company's financial position at a **single point in time**; accounts may vary significantly a few days before or after the publication of the balance sheet.

The recent bankruptcy of Enron, the seventh-largest U.S. company at the time, highlights the omission of important items in the balance sheet. In Enron's case, it failed to disclose certain **off-balance-sheet financing obligations** in its main financial statements.<sup>(K)</sup>

**Balance Sheet Format (report form)**

See, for example, Illustration 5-16, which lists assets, followed by liabilities and stockholders' equity directly below, on the same page

SCIENTIFIC PRODUCTS, INC.			
BALANCE SHEET			
DECEMBER 31, 2010			
Assets			
<u>Current assets</u>			
Cash		\$ 42,485	
Available-for-sale securities—at fair value		28,250	
Accounts receivable	\$165,824		
Less: Allowance for doubtful accounts	<u>1,850</u>	163,974	
Notes receivable		23,000	
Inventories—at average cost		489,713	
Supplies on hand		9,780	
Prepaid expenses		<u>16,252</u>	
Total current assets			\$ 773,454
<u>Long-term investments</u>			
Investments in Warren Co.			87,500
<u>Property, plant, and equipment</u>			
Land—at cost		125,000	
Buildings—at cost	975,800		
Less: Accumulated depreciation	<u>341,200</u>	<u>634,600</u>	
Total property, plant, and equipment			759,600
<u>Intangible assets</u>			
Goodwill			<u>100,000</u>
Total assets			<u>\$1,720,554</u>
Liabilities and Stockholders' Equity			
<u>Current liabilities</u>			
Notes payable to banks	\$ 50,000		
Accounts payable	197,532		
Accrued interest on notes payable	500		
Income taxes payable	62,520		
Accrued salaries, wages, and other liabilities	9,500		
Deposits received from customers	<u>420</u>		
Total current liabilities			\$ 320,472
<u>Long-term debt</u>			
Twenty-year 12% debentures, due January 1, 2020		<u>500,000</u>	
Total liabilities			820,472
<u>Stockholders' equity</u>			
Paid in on capital stock			
Preferred, 7%, cumulative			
Authorized, issued, and outstanding,			
30,000 shares of \$10 par value	\$300,000		
Common—			
Authorized, 500,000 shares of			
\$1 par value; issued and			
outstanding, 400,000 shares	400,000		
Additional paid-in capital	<u>37,500</u>	737,500	
Retained earnings		<u>162,582</u>	
Total stockholders' equity			<u>900,082</u>
Total liabilities and stockholders' equity			<u>\$1,720,554</u>



**Sec.A.  
15%**

## **External Financial Reporting Decisions Level C**

### **Content Specification Outlines**

#### **A. External Financial Reporting Decisions (15% - Levels A, B, and C)**

##### **1. Financial statements**

- a. Balance sheet
- b. Income statement
- c. Statement of changes in equity
- d. Statement of cash flows

### **Learning Outcome Statements**

#### **Section A. External Financial Reporting Decisions (15% - Levels A, B, and C)**

##### **Part 1 – Section A.1. Financial statements**

For the balance sheet, income statement, statement of changes in equity, and the statement of cash flows, the candidate should be able to:

- a. identify the users of these financial statements and their needs
- b. demonstrate an understanding of the purposes and uses of each statement
- c. identify the major components and classifications of each statement
- d. identify the limitations of each financial statement
- e. identify how various financial transactions affect the elements of each of the financial statements and determine the proper classification of the transaction
- f. identify the basic disclosures related to each of the statements (footnotes, supplementary schedules, etc.)
- g. demonstrate an understanding of the relationship among the financial statements
- h. prepare a balance sheet, an income statement, a statement of changes in equity, and a statement of cash flows (indirect method)



## STATEMENT OF CASH FLOWS

As indicated that one of the three basic objectives of financial reporting is “assessing the amounts, timing, and uncertainty of cash flows.” The three financial statements we have looked at so far—the income statement, the statement of stockholders’ equity, and the balance sheet—each **present some information** about the cash flows of an enterprise during a period. But they do so to a limited extent.<sup>(K)</sup>

For instance,

- the **income statement** provides information about resources provided by operations, but not exactly cash.
- The **statement of stockholders’ equity** shows the amount of cash used to pay dividends or purchase treasury stock.
- **Comparative balance sheets** might show what assets the company has acquired or disposed of and what liabilities it has incurred or liquidated.<sup>(K)</sup>

Useful as they are, **none of these statements presents a detailed summary of all the cash inflows and outflows**, or the sources and uses of cash during the period. To fill this need, the FASB requires the statement of cash flows (also called the cash flow statement).<sup>(K)</sup>

Users of financial statements are interested in the operating, investing, and financing activities of companies. For a particular company they ask questions such as

- What is the relationship between net income and cash provided by operations?
- Why are dividends not larger, in light of rising income?
- What expansion activities took place and how were they financed?
- Why did cash decrease even though net income was reported?
- What happened to the proceeds received from issuing capital stock? Each of these questions relates to the cash flows of the company.<sup>(N)</sup>
  1. Where did the cash come from during the period?
  2. What was the cash used for during the period?
  3. What was the change in the cash balance during the period?<sup>(K)</sup>

To satisfy these objectives, GAAP requires a company to present a statement of cash flows for the accounting period along with its income statement and balance sheet. The statement of cash flows is an integral part of a company’s financial statements.<sup>(N)</sup>

The statement of cash flows is very important for determining a company’s financial health. Though net income provides a measure of a company’s success or failure, cash is what the company needs in order to survive.<sup>(HK)</sup>

- The primary purpose of the statement of cash flows is to **provide information about a company’s cash receipts and cash payments during a period.**
  - To achieve this purpose, the statement of cash flows reports the following: (1) the cash effects of operations during a period, (2) investing transactions, (3) financing transactions, and (4) the net increase or decrease in cash during the period.<sup>(K)</sup>
- A secondary objective is to **provide cash-basis information** about the company’s operating, investing, and financing activities.
- The statement of cash flows therefore **reports cash receipts, cash payments, and net change in cash** resulting from a company’s operating, investing, and financing activities during a period. Its format reconciles the beginning and ending cash balances for the period.<sup>(K)</sup>



**Illustration 5-24 shows the basic format of the statement of cash flows.**

**Statement of Cash Flows**

Cash flows from operating activities	\$XXX
Cash flows from investing activities	XXX
Cash flows from financing activities	<u>XXX</u>
Net increase (decrease) in cash	XXX
Cash at beginning of year	<u>XXX</u>
Cash at end of year	<u>XXX</u>

Supplemental schedule of **noncash investing and financing** activities:

- XXXXX
- XXXXX

Please note the order of the three sections and the order in which we show the beginning and the ending cash balances for the year. This is the correct way to do this and how you should present it if required. <sup>(HK)</sup>

Note: The above format can be used for either the direct or indirect methods. Under these two different methods the only difference will be in the presentation of the cash flows from operating activities. <sup>(HK)</sup>

**Additional Statement of Cash Flows Disclosures**

When the SCF is prepared using the direct method, a disclosure of the reconciliation between net income and cash flows from operating activities is required. <sup>(HK)</sup>

When the SCF is prepared under the indirect method, a disclosure of the amount of cash paid for interest and cash paid for taxes is required. <sup>(HK)</sup>

Noncash investing or financing transactions—transactions that are either investing or financing in nature but did not involve cash in the transaction—must be presented separately in a schedule at the end of the statement of cash flows. <sup>(HK)</sup>

**Use of the Statement of Cash Flows**

The FASB states that the information in a statement of cash flows, if used with information in the other financial statements, helps external users assess:

- a company's *ability* to **generate positive future net cash flows**,
- a company's *ability* to **meet its obligations**,
  - Lenders and other creditors use the cash flow statement, particularly the cash flow from operations section, to determine whether they will get paid. A high amount of operating cash flow indicates a company is generating enough cash from its operations to cover its debt obligations. A low or negative operating cash flow indicates the company may have to borrow to pay its ongoing operating costs. <sup>(HK)</sup>
- a company's *ability* to **pay dividends**,
  - If the company pays a dividend, investors look at the statement of cash flows to determine whether the dividend is sustainable. If the dividend being paid is greater than the company's cash flow from operations, a dividend cut is probably in the future. <sup>(HK)</sup>
- a company's **need for external financing**,
- the reasons for **differences between a company's net income and related cash** receipts and payments,
  - A company can report high and growing net income but may have negative cash flow from operations. For example, if the profits the company is earning are tied up in growing receivables and inventory, it may not have enough cash to pay its ongoing expenses. Increasing receivables can result from sales growth (a good thing), but increasing receivables can also result from customers who do not pay their bills (a bad





thing).

Increasing

inventory can also result from sales growth (a good thing), but increasing inventory can also result from slow-moving inventory that has become obsolete (a bad thing). A user of the statement needs to be able to determine the causes of the increased receivables or inventory. <sup>(HK)</sup>

- Low or negative cash flow from operations can also indicate that the company's sales and/or profits are not adequate and the company is in serious financial trouble. <sup>(HK)</sup>
- both the cash and noncash aspects of a company's financing and investing transactions during the accounting period. <sup>(N)</sup>
- the liquidity, solvency and financial flexibility of the company <sup>(HK)</sup>; and
- the effect of investing and financing transactions on the company's financial position; <sup>(HK)</sup>

In a company that is growing, borrowing to pay current cash needs is understandable because of the increased working capital needs that sales growth brings. However, beyond a point, borrowing to pay current obligations is not sustainable because there is a limit to how much a company can borrow. Furthermore, as long as the sales growth continues, the company will not be in a position to repay the debt. Growth can be better financed through increased equity. A company with high sales growth and a great need of cash to support its increased working capital needs can even go bankrupt if it is not able to appropriately finance its working capital needs to support its sales growth. <sup>(HK)</sup>

The statement of cash flows reveals to lenders and potential investors how the company is using its cash. For example, a negative operating cash flow and a positive financing cash flow indicates that the company is financing its operations with either debt or equity. An examination of the financing section of the statement will reveal whether debt or equity is being used. The user of the statement needs to be able to interpret the meaning of what he or she is seeing in the statement of cash flows, in order to determine whether the company is going through "growing pains" that can be handled through appropriate financing and if so, whether the company's financing is appropriate, or whether the company is developing serious financial difficulty that could lead to bankruptcy. <sup>(HK)</sup>

### Limitations of the Statement of Cash Flows

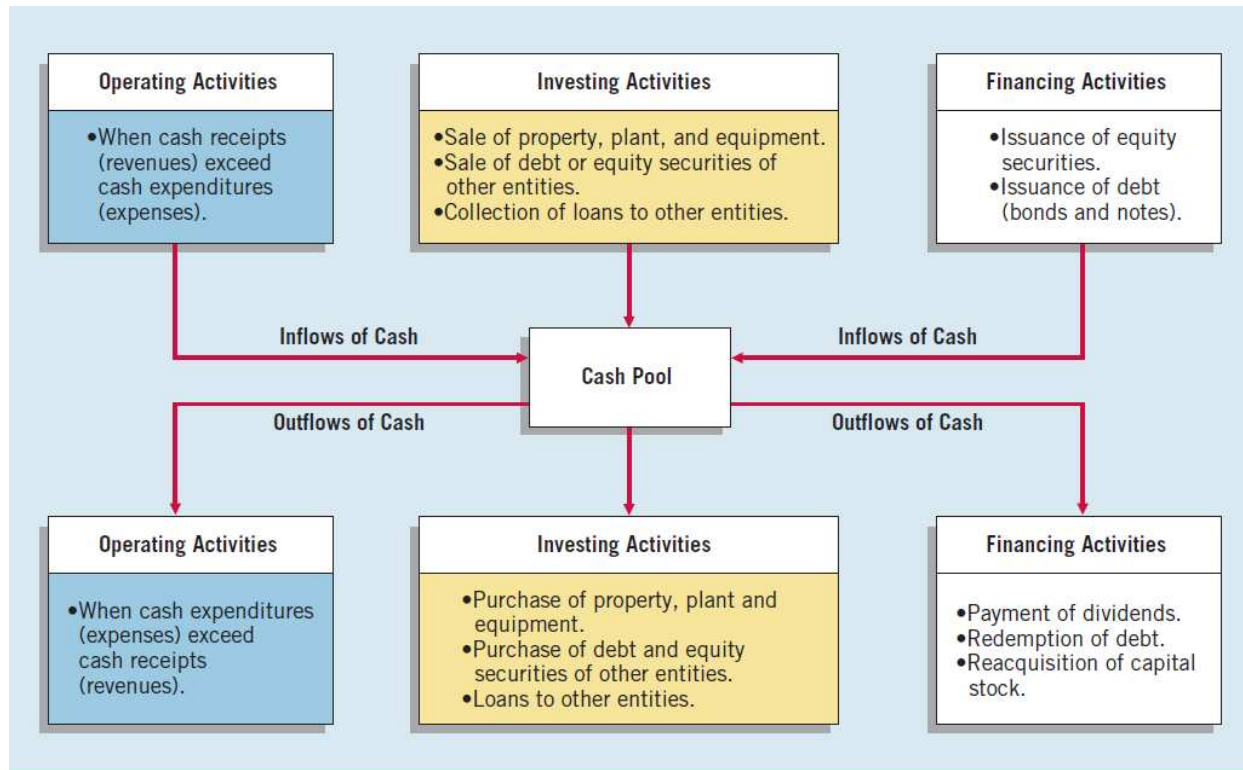
The statement of cash flows shows only how much cash was received and paid out for operating, investing and financing activities. The statement of cash flows alone would not show that, for example, a positive operating cash flow was achieved by not paying the payables when due. The existence of past due payables is important information for a user to have in interpreting the statement of cash flows and for analyzing the financial condition of the company. In order to recognize something like past due payables, the balance sheet and income statement are needed. For that reason, the statement of cash flows needs to be interpreted in the context of the other financial statements.

The indirect method of preparing the SCF has an additional limitation. It does not show the sources and uses of operating cash individually but shows only adjustments to accrual-basis net income. Because of this limitation, a user can have difficulty in comprehending the information presented.

For that reason, the direct method is preferable even though both methods are acceptable. The indirect method is more commonly used, however, because a separate reconciliation between the income statement and cash flows from operating activities is not required, as it is with the direct method. Under the indirect method, the reconciliation is created when the cash flows from operating activities figure on the statement of cash flows is calculated because it begins with net income.

Illustration 5-25 graphs the inflows and outflows of cash classified by activity.

ILLUSTRATION 5-25 Cash Inflows and Outflows



The statement's value is that it helps users evaluate **liquidity**, **solvency**, and **financial flexibility**. As stated earlier, liquidity refers to the “nearness to cash” of assets and liabilities. Solvency is the firm’s ability to pay its debts as they mature. Financial flexibility is a company’s ability to respond and adapt to financial adversity and unexpected needs and opportunities.<sup>(K)</sup>



## PREPARATION OF THE STATEMENT OF CASH FLOWS

### Reporting Guidelines and Practices

To understand how to use and to prepare a statement of cash flows, it is important to have a definition of the statement and guidelines for preparing the statement. A statement of cash flows is a financial statement of a company that shows the cash inflows, cash outflows, and net change in cash from its operating, investing, and financing activities during an accounting period, in a manner that reconciles the beginning and ending cash balances.<sup>(N)</sup>

One of the good things about the SCF is that we know the net cash flow from all three sources combined before we begin to prepare the statement. The total of the cash flows from operating, investing and financing activities must be equal to the amount of change in the balance of cash and cash equivalents from the beginning of the year to the end of the year. Because the cash and cash equivalents balances for the prior period and the current period are on the balance sheet, we can easily see what the total increase or decrease in cash was for the period. The main task with the SCF is determining how to classify the individual cash flows and to reconcile their total cash flows with the amount of change in cash and cash equivalents during the period.<sup>(HK)</sup>

Cash flows from operating activities may be calculated in two different ways, and both ways are acceptable. The two acceptable methods are called the **direct method** and the **indirect method**. Both are acceptable under U.S. GAAP, and a company can choose the method it uses. However, to be consistent, the company must use the same method from one period to the next.

You will need to be familiar with both the direct and the indirect method, be able to calculate any of the individual numbers that would be included in the SCF, be able to prepare an entire SCF, and be able to reconcile the statement of cash flows to the income statement and the balance sheets using the indirect method.<sup>(HK)</sup>

The direct and the indirect method **differ only in the presentation of the operating activities section**. The investing and financing activity sections are prepared in the same manner and look exactly the same under both methods of preparation.<sup>(HK)</sup>



**CLASSIFICATION OF CASH FLOWS (O-I-F)**

The statement of cash flows (SCF) classifies cash receipts and cash payments -for the purposes of presentation and usefulness- by **operating**, **investing**, and **financing** activities. Transactions and other events characteristic of each kind of activity is as follows. The SCF also presents information about noncash investing and financing activities.

Illustration 23-1 classifies the typical cash receipts and payments of a company according to operating, investing, and financing activities. The **operating activities category is the most important**. It shows the cash provided by company operations. This source of cash is generally considered to be the best measure of a company's ability to generate enough cash to continue as a going concern.

**Operating**

## Cash inflows

- From sales of goods or services.
- From collection of accounts receivable <sup>(N)</sup>
- From returns on loans (interest) and on equity securities (dividends).

## Cash outflows

- To suppliers for inventory (or raw materials),.
- To employees for services.
- To government for taxes.
- To lenders for interest.
- To others for expenses.

**Income  
Statement  
Items**

**Investing**Cash inflows -*cash receipts (proceeds)*

- From sale of property, plant, and equipment.
- From sale of investments (debt or equity securities) of other entities.
- From collection of principal on loans to other entities (principal repayments of loans by borrowers (e.g., collections of notes receivable).

## Cash outflows

- To purchase /acquiring property, plant, and equipment.
- To purchase investments (debt /bonds), or (stocks equity securities) of other entities.
- To make loans to other entities (borrowers).

**Generally  
Long-Term  
Asset Items**

**Financing**

## Cash inflows

- From sale of equity securities, issuing equity securities (i.e., common stock and preferred stock).
- From issuance of debt (bonds and notes).
- From issuing mortgages
- From other short- or long-term borrowings

## Cash outflows

- To stockholders as dividends.
- To redeem long-term debt (repayments of amounts borrowed) or reacquire capital stock (repurchase of the company's equity securities).

**Generally  
Long-Term  
Liability  
and Equity  
Items**



## CLASSIFICATION OF CASH FLOWS (O-I-F)

The statement of cash flows (SCF) classifies cash receipts and cash payments -for the purposes of presentation and usefulness- by operating, investing, and financing activities. Transactions and other events characteristic of each kind of activity is as follows.

### Cash Flows from Operating Activities

1. **Operating activities** involve the cash effects of transactions that enter into the **determination of net income**, such as cash receipts from sales of goods and services, and cash payments to suppliers and employees for acquisitions of inventory and expenses.<sup>(K)</sup> i.e., These include transactions involving acquiring (purchasing or manufacturing), selling, and delivering goods for sale, as well as providing services.<sup>(N)</sup> A company's operating activities include all its transactions and other events that are **not** investing and financing activities.<sup>(N)</sup>

Cash flows from operating activities are cash inflows and cash outflows that result from the company's main business activities and **central operations**, transactions that cause gains or losses are generally **not** considered operating activities.<sup>(HK)</sup>

Operating activities are the *earning-related activities* of a company. Beyond revenue and expense activities represented in **an income statement**, they include the net inflows and outflows of cash resulting from **related operating activities** like extending credit to customers, investing in inventories, and obtaining credit from suppliers. Operating activities relate to income statement items (with minor exceptions) and to **balance sheet items relating to operations**—usually working capital accounts like receivables, inventories, prepayments, payables, and accrued expenses.<sup>(Wild)</sup>

### Exception

The only exception to the preceding statement is cash flows from purchases, sales and maturities of **trading securities** being held for sale in the near term. Cash flows from the purchase, sale and maturity of trading securities **usually are classified as operating activities**, but whether to classify them as operating or investing activities is a management decision.

Some securities that are classified as trading securities are **not** being held for sale in the near term, and so their purchase, sale or maturity would be an investing, not an operating, cash flow. Therefore, cash receipts and cash payments related to trading securities reported at fair value should be classified **based on the nature and purpose for which the securities were acquired**. The facts and circumstances of each individual investment in trading securities need to be evaluated to determine whether their cash flows are to be classified as operating activities or as investing activities.<sup>(HK)</sup>

The following specific items are classified as operating activities:

- Cash received from customers and paid to suppliers in the course of the company's primary business activity.
- Interest paid on bonds and other debt (loans, leases, and mortgages).
- Interest received and dividends received from debt and equity investments.
- Cash paid to the government for taxes and cash received back from the government as tax refunds, except as noted below under Cash Flows from Financing Activities.
- Cash flows from the purchase, sale and maturity of trading securities **usually** will be classified as operating activities, not investing activities. However, as noted above, some securities are classified on the balance sheet as trading securities even though they are not being held for sale in the near term. Cash receipts and cash payments related to trading securities reported at fair value should be classified on the SCF based on the nature and purpose of the securities. Therefore, the facts and circumstances of the situation need to be evaluated to determine whether cash flows from trading securities are to be classified as operating activities or as investing activities.<sup>(HK)</sup>



### Cash Flows from Investing Activities

2. Investing activities generally involve **long-term assets** (acquiring and disposing of noncash assets<sub>(w)</sub>).

Investing activities are those activities that the company undertakes to generate a future profit, or return, from investments. Events that are investing activities are:

- Purchasing and selling property, plant and equipment (fixed assets/ productive long-lived assets).
- Making (lending money) and collecting loans to other parties.
- Acquiring, and disposing of investments
- Acquiring and disposing of available-for-sale or held-to-maturity securities (equities and debt instruments).
- The purchase and sale of assets other than a company's products or services
- In addition, as mentioned above, cash flows from the purchase, sale and maturity of trading securities may be classified as investing activities if the securities are not being held for sale in the near term.

#### Take a Note:

How a company classifies certain items depends on its operations. For instance, if a company regularly factors its accounts receivable, then it treats the cash receipts as cash inflows from operating activities. Similarly, if a company requires its customers to sign notes for credit sales, then it treats the cash receipts from collections of these notes receivable as cash inflows from operating activities.<sup>(N)</sup>

### Cash Flows from Financing Activities

3. Financing activities involve liability and **stockholders' equity** items.

Financing activities are the activities that a company undertakes to **raise capital** to finance the business. <sup>(HK)</sup> Financing activities are means of contributing, withdrawing, and servicing funds to support business activities. They include borrowing and repaying funds with bonds and other loans. They also include contributions and withdrawals by owners and their return (dividends) on investment.<sup>(w)</sup>

Events that are considered to be financing activities include

#### Obtaining capital from owners (investments by owners):

- Issuing equity securities (i.e., common stock and preferred stock)

#### Providing them with a return on, and a return of, their investment (distributions to owners):

- Paying dividends (note that dividends paid are financing activities, but dividends received are operating activities).
- Repurchase of the company's equity securities (Treasury stock transactions).

#### Obtaining cash from creditors:

- Issuing debt (bonds).
- Obtaining a loan.

#### Repaying cash to creditors:

- Repaying the principal of the loan.
- Repayment of amounts borrowed (principal on other debt obligations), including repayment of the principal portion of capital lease payments for fixed assets. (The interest portion of payments on capital leases and loans is classified as cash flows from operating activities.)

Normally, cash flows from taxes paid and tax refunds received are classified as operating activities. However, certain cash flows relating to income tax expense associated with share-based compensation are classified as financing activities.



**Take a Note:**

Most borrowings and repayments of borrowings are financing activities. However, as we noted, the settlement of liabilities such as accounts payable incurred to acquire inventory and salaries payable are operating activities.

By examining a company's investing and financing activities, a financial statement reader can better understand why assets and liabilities increased or decreased during the period.

**Note:** We recommend that you know the specific items listed under each of the three categories.

The sum of the cash flows from the three categories above equals the net increase or decrease in cash and cash equivalents during the period. The net increase or decrease in cash and cash equivalents is also reported in the SCF.<sup>(HK)</sup>

**Take an EXAM Note**

All transactions that involve cash will be classified in one of the three categories above. You will need to know what items are included in each of these three categories. Common exam questions on the SCF will be along the lines of "Which of the following items should be included in financing activities?"<sup>(HK)</sup>

**Noncash Investing and Financing Activities**

As we will see, most financing and investing activities of a company affect its cash; however, some transactions (such as buying land by issuing common stock) are "simultaneous" investing and financing activities that do not affect its cash. These transactions are important in providing an overall picture of a company's investing and financing activities. The company is required to report these items either in a separate schedule or narrative explanation that accompanies the statement of cash flows.<sup>(N)</sup>

The SCF also presents information about noncash investing and financing activities. Noncash investing and financing activities are investing or financing activities for which no cash is used. An example of a noncash financing activity is borrowing to purchase an asset when the lender sends the loan proceeds directly to the seller of the asset. The cash from the loan proceeds is never deposited to the buyer/borrower's bank account, and the payment for the asset never flows out of the account. An asset is purchased (investing) and a new obligation for a liability is incurred (financing), but there are no actual cash flows to be reported on the SCF. Information on noncash investing and financing activities is presented in the disclosures (notes) to the statement of cash flows.<sup>(HK)</sup>



## OVERVIEW OF THE PREPARATION OF THE STATEMENT OF CASH FLOWS

### Sources of Information

Companies obtain the information to prepare the statement of cash flows from several sources:

1. **Comparative balance sheets**, used to calculate the amount of change in assets, liabilities and equity items from the beginning of the period to the end of the period. Usually this will be two years of balance sheets.
2. the current income statement, and
3. selected transaction data, data from the general ledger as needed for additional detailed information to determine how cash was provided or used during the period. (K, HK)

Note: The direct and indirect methods are different only in their presentation of cash flows from operating activities. Despite the difference in presentation, the end total of net cash flows from operating activities will be exactly the same under both methods. The difference between the two methods relates only to the presentation of the information, not to the results. (HK)

### Overview of the Two Methods

The **direct method** shows each item that affected cash flow, such as cash collected from customers. The direct method of calculating cash flow from operating activities presents major classes of operating cash receipts less major classes of operating cash disbursements. (ICMA) Each item is calculated by starting with the relevant item on the income statement (for example, sales revenue for cash collected from customers) and adjusting it using the balances in the relevant balance sheet account(s) at the beginning of the period and at the end of the period covered by the income statement (for example, accounts receivable for cash collected from customers). (HK)

Each individual line on the income statement is also adjusted to remove the effect of noncash transactions (such as depreciation expense) and non-operating activity transactions (such as gains or losses on the sale of fixed assets). After these adjustments are made, we will have what is in fact a cash basis income statement of operating activities. (HK)

Under the **indirect method**, all adjustments are made to the net income figure from the income statement. The adjustments that are made will be the same as they are for the direct method: adjustments for changes in balance sheet accounts and the elimination of noncash and non-operating activity transactions. (HK)

Both of these methods produce the same result for net cash flow from operating activities, because the same adjustments are made to the amounts on the income statement. The difference is that under the direct method, **each individual line** on the income statement is adjusted, whereas under the indirect method, the **net income figure** is adjusted. (HK)

The FASB prefers the **direct** method to the **indirect** method. If the direct method is used, the FASB requires a reconciliation of net income to net cash flow from operating activities to be provided in a separate schedule. That reconciliation reports the same information as would be reported by the cash flows from operating activities section prepared using the indirect method. Therefore, a company that chooses to prepare the cash flow from operating activities section of its SCF using the direct method will effectively need to prepare its SCF according to both the direct and the indirect methods. **The indirect method is used more extensively in practice.** (HK)



The following simple example demonstrates how companies use these sources in preparing a statement of cash flows.

On January 1, 2010, in its first year of operations, Telemarketing Inc. issued 50,000 shares of \$1 par value common stock for \$50,000 cash. The company rented its office space, furniture, and telecommunications equipment and performed marketing services throughout the first year. In June 2010 the company purchased land for \$15,000.

Illustration 5-26 shows the company's comparative balance sheets at the beginning and end of 2010.

#### ILLUSTRATION 5-26 Comparative Balance Sheets

<b>TELEMARKETING INC. BALANCE SHEETS</b>			
<u>Assets</u>	<u>Dec. 31, 2010</u>	<u>Jan. 1, 2010</u>	<u>Increase/Decrease</u>
Cash	\$31,000	\$—	\$31,000 Increase
Accounts receivable	41,000	—	41,000 Increase
Land	15,000	—	15,000 Increase
Total	<u>\$87,000</u>	<u>\$—</u>	
<u>Liabilities and Stockholders' Equity</u>			
Accounts payable	\$12,000	\$—	12,000 Increase
Common stock	50,000	—	50,000 Increase
Retained earnings	25,000	—	25,000 Increase
Total	<u>\$87,000</u>	<u>\$—</u>	

Illustration 5-27 presents the income statement and additional information.

#### ILLUSTRATION 5-27 Income Statement Data

<b>TELEMARKETING INC. INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 2010</b>	
Revenues	\$172,000
Operating expenses	<u>120,000</u>
Income before income tax	52,000
Income tax	<u>13,000</u>
<b>Net income</b>	<b><u>\$ 39,000</u></b>
<b>Additional information:</b>	
Dividends of \$14,000 were paid during the year.	





## Preparing the Statement of Cash Flows

Preparing the statement of cash flows from these sources involves four steps:

1. Determine the cash provided by (or used in) operating activities.
2. Determine the cash provided by or used in investing and financing activities.
3. Determine the change (increase or decrease) in cash during the period.
4. Reconcile the change in cash with the beginning and the ending cash balances.

## Cash Flows from Operating Activities Under the Indirect Method

Under the indirect method of preparing the cash flows from operating activities section of the SCF, we start with net income as the top line of the operating activities section of the SCF and then make adjustments to net income by reversing noncash and non-operating items included in net income.<sup>(HK)</sup>

Note: When the indirect method is used, the amount of cash paid for interest and the amount of cash paid for taxes must be disclosed at the end of the statement in a supplementary schedule. <sup>.(HK)</sup>

### Net income is adjusted for four types of items, as follows. <sup>(HK)</sup>

- Eliminate noncash income and expense items such as depreciation that are included in the income statement.
- Eliminate investing and financing activity events whose results are included in the income statement, for example gains and losses on the income statement.
- Include the effect of any operating activities that were not included in net income but did have a cash effect and exclude (eliminate) the effect of any events that are included in net income but did not have a cash effect. Examples of these adjustments are those that must be made for changes in receivables, payables, inventory and other assets and liabilities.
- Cash flows from the purchase, sale and maturity of trading securities will usually be classified as operating activities, not investing activities (explained above). If those cash flows are to be classified as operating activities on the SCF, those cash flows will need to be included as an adjustment to reconcile net income to net cash from operating activities.

**Cash provided by operating activities** is the excess of cash receipts over cash payments from operating activities. Companies determine this amount by converting net income on an accrual basis to a cash basis. To do so, they add to or deduct from net income those items in the income statement that do not affect cash. This procedure requires that a company analyze not only the current year's income statement but also the comparative balance sheets and selected transaction data.<sup>(K)</sup>

Analysis of Telemarketing's comparative balance sheets reveals two items that will affect the computation of net cash provided by operating activities:

1. The increase in accounts receivable reflects a noncash increase of \$41,000 in revenues.
2. The increase in accounts payable reflects a noncash increase of \$12,000 in expenses.

Therefore, to arrive at cash provided by operations, Telemarketing Inc. deducts from net income the increase in accounts receivable (\$41,000), and it adds back to net income the increase in accounts payable (\$12,000). As a result of these adjustments, the company determines cash provided by operations to be \$10,000, computed as shown in Illustration 5-28.



## ILLUSTRATION 5-28 Computation of Net Cash Provided by Operations

Net income		\$39,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Increase in accounts receivable	\$(41,000)	
Increase in accounts payable	<u>12,000</u>	<u>(29,000)</u>
<b>Net cash provided by operating activities</b>		<b><u>\$10,000</u></b>

Next, the company determines its investing and financing activities. Telemarketing Inc.'s only investing activity was the land purchase. It had two financing activities: (1) Common stock increased \$50,000 from the issuance of 50,000 shares for cash. (2) The company paid \$14,000 cash in dividends. Knowing the amounts provided/used by operating, investing, and financing activities, the company determines the net increase in cash. Illustration 5-29 presents Telemarketing Inc.'s statement of cash flows for 2010.

## ILLUSTRATION 5-29 Statement of Cash Flows

TELEMARKETING INC. STATEMENT OF CASH FLOWS FOR THE YEAR ENDED DECEMBER 31, 2010		
Cash flows from operating activities		
Net income		\$39,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Increase in accounts receivable	\$(41,000)	
Increase in accounts payable	<u>12,000</u>	<u>(29,000)</u>
<b>Net cash provided by operating activities</b>		<b>10,000</b>
Cash flows from investing activities		
Purchase of land	<u>(15,000)</u>	
<b>Net cash used by investing activities</b>		<b>(15,000)</b>
Cash flows from financing activities		
Issuance of common stock	50,000	
Payment of cash dividends	<u>(14,000)</u>	
<b>Net cash provided by financing activities</b>		<b><u>36,000</u></b>
<b>Net increase in cash</b>		<b>31,000</b>
Cash at beginning of year		<u>-0-</u>
<b>Cash at end of year</b>		<b><u>\$31,000</u></b>

The increase in cash of \$31,000 reported in the statement of cash flows agrees with the increase of \$31,000 in cash calculated from the comparative balance sheets.

## Significant Noncash Activities

Not all of a company's significant activities involve cash. Examples of significant noncash activities are:

1. Issuance of common stock to purchase assets.
2. Conversion of bonds into common stock.
3. Issuance of debt to purchase assets.
4. Exchanges of long-lived assets.





Significant financing and investing activities that do not affect cash are not reported in the body of the statement of cash flows. Rather, these activities are reported in either a separate schedule at the bottom of the statement of cash flows or in separate notes to the financial statements. Such reporting of these noncash activities satisfies the full disclosure principle.

Illustration 5-30 shows an example of a comprehensive statement of cash flows.

Note that the company purchased equipment through the issuance of \$50,000 of bonds, which is a significant noncash transaction.

#### ILLUSTRATION 5-30 Comprehensive Statement of Cash Flows

NESTOR COMPANY		
STATEMENT OF CASH FLOWS		
FOR THE YEAR ENDED DECEMBER 31, 2010		
<b>Cash flows from operating activities</b>		
Net income		\$320,750
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	\$88,400	
Amortization of intangibles	16,300	
Gain on sale of plant assets	(8,700)	
Increase in accounts receivable (net)	(11,000)	
Decrease in inventory	15,500	
Decrease in accounts payable	(9,500)	91,000
<b>Net cash provided by operating activities</b>		<b>411,750</b>
<b>Cash flows from investing activities</b>		
Sale of plant assets	90,500	
Purchase of equipment	(182,500)	
Purchase of land	(70,000)	
<b>Net cash used by investing activities</b>		<b>(162,000)</b>
<b>Cash flows from financing activities</b>		
Payment of cash dividend	(19,800)	
Issuance of common stock	100,000	
Redemption of bonds	(50,000)	
<b>Net cash provided by financing activities</b>		<b>30,200</b>
<b>Net increase in cash</b>		<b>279,950</b>
Cash at beginning of year		135,000
<b>Cash at end of year</b>		<b>\$414,950</b>
<b>Noncash investing and financing activities</b>		
Purchase of equipment through issuance of \$50,000 of bonds		

Next example provide detailed preparation and content of the statement of cash flows.

#### ILLUSTRATION-TAX CONSULTANTS INC.

We show the steps in preparing the statement of cash flow using the data for or Tax Consultants Inc. To begin, we use the **first year of operations** for Tax Consultants Inc.



The company started on January 1, 2009, when it issued 60,000 shares of \$1 par value common stock for \$60,000 cash. The company rented its office space, furniture, and equipment, and performed tax consulting services throughout the first year. The comparative balance sheets at the beginning and end of the year 2009 appear in Illustration 23-3.

ILLUSTRATION 23-3 Comparative Balance Sheets, Tax Consultants Inc., Year 1

TAX CONSULTANTS INC. COMPARATIVE BALANCE SHEETS			
Assets	Dec. 31, 2009	Jan. 1, 2009	Change Increase/Decrease
Cash	\$49,000	\$0-	\$49,000 Increase
Accounts receivable	36,000	0-	36,000 Increase
Total	<u>\$85,000</u>	<u>\$0-</u>	
Liabilities and Stockholders' Equity			
Accounts payable	\$ 5,000	\$0-	\$ 5,000 Increase
Common stock (\$1 par)	60,000	0-	60,000 Increase
Retained earnings	20,000	0-	20,000 Increase
Total	<u>\$85,000</u>	<u>\$0-</u>	

Illustration 23-4 shows the income statement and additional information for Tax Consultants.

ILLUSTRATION 23-4 Income Statement, Tax Consultants Inc., Year 1

TAX CONSULTANTS INC. INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 2009	
Revenues	\$125,000
Operating expenses	<u>85,000</u>
Income before income taxes	40,000
Income tax expense	<u>6,000</u>
Net income	<u>\$ 34,000</u>
<b>Additional Information</b>	
Examination of selected data indicates that a dividend of \$14,000 was declared and paid during the year.	

### Step 1: Determine the Change in Cash

To prepare a statement of cash flows, the first step is to determine the change in cash. This is a simple computation. Tax Consultants had no cash on hand at the beginning of the year 2009. It had \$49,000 on hand at the end of 2009. Thus, cash changed (increased) in 2009 by \$49,000.

### Step 2: Determine Net Cash Flow from Operating Activities

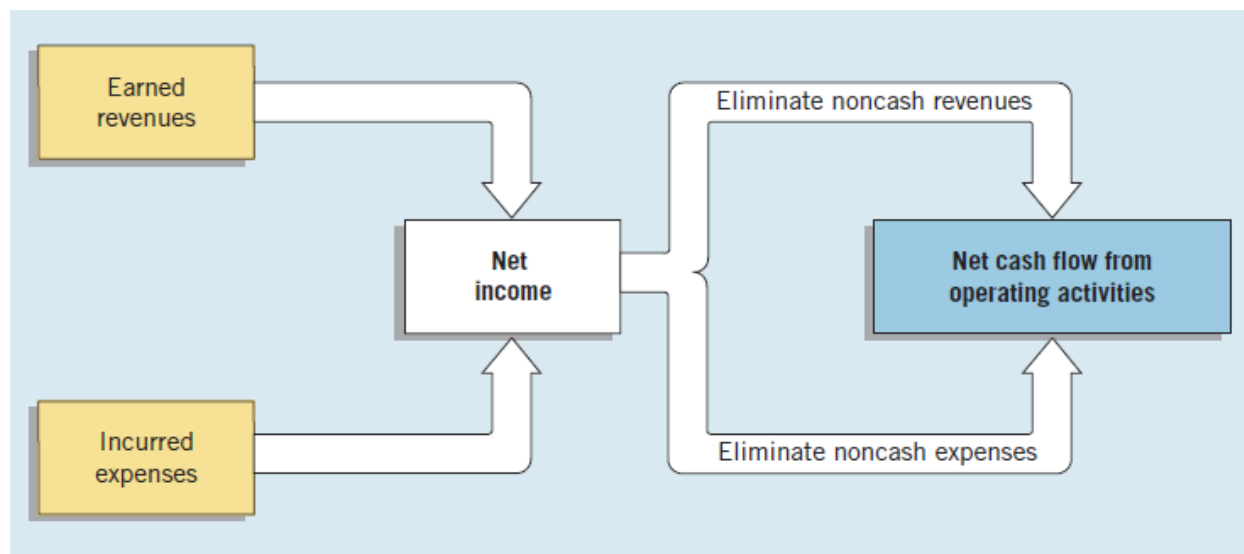


To determine net cash flow from operating activities, companies adjust net income in numerous ways. A useful starting point is to understand why net income must be converted to net cash provided by operating activities.

Under generally accepted accounting principles, most companies use the accrual basis of accounting. As you have learned, this basis requires that companies record revenue when earned and record expenses when incurred. Earned revenues may include credit sales for which the company has not yet collected cash. Expenses incurred may include some items that the company has not yet paid in cash. Thus, under the accrual basis of accounting, net income is not the same as net cash flow from operating activities.

To arrive at net cash flow from operating activities, a company must determine revenues and expenses on a cash basis. It does this by eliminating the effects of income statement transactions that do not result in an increase or decrease in cash. Illustration 23-5 shows the relationship between net income and net cash flow from operating activities.

ILLUSTRATION 23-5 Net Income versus Net Cash Flow from Operating Activities



In this chapter, we use the term net income to refer to accrual-based net income. A company may convert net income to net cash flow from operating activities through either a direct method or an indirect method. We explain both methods in the following sections. The advantages and disadvantages of these two methods are discussed later in the chapter.

### Indirect Method

The indirect method (or reconciliation method) starts with net income and converts it to net cash flow from operating activities. In other words, the indirect method adjusts net income for items that affected reported net income but did not affect cash. To compute net cash flow from operating activities, a company adds back noncash charges in the income statement to net income and deducts noncash credits. We explain the two adjustments to net income for Tax Consultants, namely, the increases in accounts receivable and accounts payable, as follows.

**Increase in Accounts Receivable—Indirect Method.****Net Accounts Receivable**

An adjustment needs to be made to net income for the change in the net accounts receivable balance over the period.

If the ending net accounts receivable balance is higher at the end of the year than it was at the beginning, it means that more people bought something and have not yet paid for it than people who bought something last year and paid for it this year. Therefore, if net accounts receivable increases during the period, it means that cash collections were actually lower than the revenue recognized. This amount of the increase in net accounts receivable will need to be subtracted from net income because the cash corresponding to the revenue has not yet been received.

On the other hand, if the net accounts receivable balance decreases during the year, it means that the company collected more cash from last year's sales (for example, sales made in December of last year) than it failed to collect from this year's sales (for example, sales made this December). This decrease in net accounts receivable over the period will therefore need to be added to net income in order to properly calculate the cash received from operating activities.

Make sure to use the amount of change in net accounts receivable, not the amount of change in gross accounts receivable.

**Note:** Any other receivable account that affected net income will need a similar adjustment made for it.

Tax Consultant's accounts receivable increased by \$36,000 (from \$0 to \$36,000) during the year. For Tax Consultants, this means that cash receipts were \$36,000 lower than revenues. The Accounts Receivable account in Illustration 23-7 shows that Tax Consultants had \$125,000 in revenues (as reported on the income statement), but it collected only \$89,000 in cash.

**ILLUSTRATION 23-7 Analysis of Accounts Receivable**

		Accounts Receivable	
1/1/09	Balance	—0—	
	Revenues	125,000	Receipts from customer 89,000
12/31/09	Balance	36,000	

As shown in Illustration 23-8, to adjust net income to net cash provided by operating activities, Tax Consultants must deduct the increase of \$36,000 in accounts receivable from net income. When the Accounts Receivable balance decreases, cash receipts are higher than revenue earned under the accrual basis. Therefore, the company adds to net income the amount of the decrease in accounts receivable to arrive at net cash provided by operating activities.

**Increase in Accounts Payable—Indirect Method.**

As with accounts receivable, an adjustment will also need to be made to reflect the change in the accounts payable balance during the period.

Accounts payable are related to the cost of goods sold line on the income statement because cost of goods sold on the income statement is calculated using, among other things, the amount of inventory that was purchased during the year. If the company purchased inventory but did not pay for it during the year, its accounts payable will go up during the year. The company has recognized an expense, but



has not yet paid for it.

Therefore, any **increase in accounts payable must be added back** to net income because net income has been decreased by the expense but the cash has not yet been paid. <sup>(HK)</sup>

Similarly, a decrease in accounts payable means that the company paid for items that it did not purchase this year. In order to create the equivalent of a cash basis net income, this **decrease in accounts payable will need to be subtracted from net income**. <sup>(HK)</sup>

**Note:** Any other payable or other liability account that affected net income will need a similar adjustment made for it. <sup>(HK)</sup>

When accounts payable increase during the year, expenses on an accrual basis exceed those on a cash basis. Why? Because Tax Consultants incurred expenses, but some of the expenses are not yet paid. To convert net income to net cash flow from operating activities, Tax Consultants must add back the increase of \$5,000 in accounts payable to net income. As a result of the accounts receivable and accounts payable adjustments, Tax Consultants determines net cash provided by operating activities is \$3,000 for the year 2009. Illustration 23-8 shows this computation.

#### ILLUSTRATION 23-8 Computation of Net Cash Flow from Operating Activities, Year 1—Indirect Method

Net income		\$34,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Increase in accounts receivable	\$(36,000)	
Increase in accounts payable	<u>5,000</u>	<u>(31,000)</u>
<b>Net cash provided by operating activities</b>		<b><u>\$ 3,000</u></b>

### Step 3: Determine Net Cash Flows from Investing and Financing Activities

#### Cash Flows from Investing Activities

To determine the cash inflows and/or outflows from investing activities, we must look at all cash flows relating to the items included in investing activities. Inflows must be reported separately from outflows for the same type of transaction. For example, purchases of fixed assets must be reported on a separate line from sales of fixed assets. They are not to be netted together. <sup>(HK)</sup>

In an exam question on the statement of cash flows, frequently some of the information needed to answer the question will be in the section of “Other Additional Information” given in the question.

When calculating the cash inflows or cash outflows from investing activities, it is important to remember that we are interested only **in the amount of cash involved in the transaction**. Information regarding the gain or loss on the transaction or the book value of the item bought or sold is not the amount that we are interested in. Although sometimes we need to use information on book value and gain or loss on the sale to calculate the amount of cash paid or received, neither the book value nor the gain or loss are used and should not appear in the statement of cash flows. <sup>(HK)</sup>

The main issue in calculating cash flows from investing activities will be the sale of property, plant or equipment. Remember that the amount reported in the investing activities section of the statement of cash flows is **the amount of cash** that was received or paid. The question may not give this amount directly but will require you to calculate it using the book value and gain or loss on the sale. <sup>(HK)</sup>



Remember that the **School of Continuing Education** amount of any gain or loss on the sale of fixed assets included in net income needs to be adjusted out of net income when calculating net cash flow from operating activities using the indirect method, as well. (HK)

**Note:** In reporting investing and financing activities, **do not net together cash paid and cash received** amounts, even when they are for the same classification of items. For example, the statement of cash flows should have separate lines for “Cash paid to purchase equipment” and “Cash received from the sale of equipment.” (HK)

After Tax Consultants has computed the net cash provided by operating activities, the next step is to determine whether any other changes in balance sheet accounts caused an increase or decrease in cash.

For example, an examination of the remaining balance sheet accounts for Tax Consultants shows increases in both common stock and retained earnings. The common stock increase of \$60,000 resulted from the issuance of common stock for cash.

The issuance of common stock is reported in the statement of cash flows as a receipt of cash from a financing activity.

### **Cash Flows from Financing Activities**

The determination of cash flows from financing activities is done in the same manner as that for investing activities. Again, we are **interested only in the amount of cash in the transaction**. For example, we include on the SCF only the amount of cash paid to redeem an outstanding bond issue before its maturity date (including any premium required to be paid due to the early redemption), not the book value of the bond on the date of the redemption or the gain or loss on the early extinguishment of the debt. However, as was the case with investing activities, we may need the information on the book value and the gain or loss in order to calculate the amount of cash actually paid to redeem the bond, if that information is not given. (HK)

Furthermore, the amount of any gain or loss on early extinguishment of debt included in net income needs to be adjusted out of net income when calculating net cash flow from operating activities. (HK)

Two items caused the retained earnings increase of \$20,000:

1. Net income of \$34,000 increased retained earnings.
2. Declaration of \$14,000 of dividends decreased retained earnings.

Tax Consultants has converted net income into net cash flow from operating activities, as explained earlier. The additional data indicate that it paid the dividend. Thus, the company reports the dividend payment as a cash outflow, classified as a financing activity.

### **Statement of Cash Flows—2009**

We are now ready to prepare the statement of cash flows. The statement starts with the operating activities section. Tax Consultants may use the indirect method to report net cash flow from operating activities.

Illustration 23-9 shows the statement of cash flows for Tax Consultants Inc., for year 1 (2009).





## ILLUSTRATION 23-9 Statement of Cash Flows, Tax Consultants Inc., Year 1

TAX CONSULTANTS INC. STATEMENT OF CASH FLOWS FOR THE YEAR ENDED DECEMBER 31, 2009 INCREASE (DECREASE) IN CASH		
Cash flows from operating activities		
Net income		\$34,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Increase in accounts receivable	\$(36,000)	
Increase in accounts payable	<u>5,000</u>	<u>(31,000)</u>
Net cash provided by operating activities		3,000
Cash flows from financing activities		
Issuance of common stock	60,000	
Payment of cash dividends	<u>(14,000)</u>	
Net cash provided by financing activities		<u>46,000</u>
Net increase in cash		49,000
Cash, January 1, 2009		<u>-0-</u>
Cash, December 31, 2009		<u>\$49,000</u>

As indicated, the \$60,000 increase in common stock results in a financing-activity cash inflow. The payment of \$14,000 in cash dividends is a financing-activity outflow of cash. The \$49,000 increase in cash reported in the statement of cash flows agrees with the increase of \$49,000 shown in the comparative balance sheets as the change in the cash account.

**ILLUSTRATION -2010**

Tax Consultants Inc. continued to grow and prosper in its second year of operations. The company purchased land, building, and equipment, and revenues and net income increased substantially over the first year. Illustrations 23-10 and 23-11 present information related to the second year of operations for Tax Consultants Inc.

## ILLUSTRATION 23-10 Comparative Balance Sheets, Tax Consultants Inc., Year 2



**TAX CONSULTANTS INC.**  
**COMPARATIVE BALANCE SHEETS**  
**AS OF DECEMBER 31**

Assets	2010	2009	Change Increase/Decrease
Cash	\$ 37,000	\$49,000	\$ 12,000 Decrease
Accounts receivable	26,000	36,000	10,000 Decrease
Prepaid expenses	6,000	—0—	6,000 Increase
Land	70,000	—0—	70,000 Increase
Building	200,000	—0—	200,000 Increase
Accumulated depreciation—building	(11,000)	—0—	11,000 Increase
Equipment	68,000	—0—	68,000 Increase
Accumulated depreciation—equipment	(10,000)	—0—	10,000 Increase
Total	<u>\$386,000</u>	<u>\$85,000</u>	
<b>Liabilities and Stockholders' Equity</b>			
Accounts payable	\$ 40,000	\$ 5,000	\$ 35,000 Increase
Bonds payable	150,000	—0—	150,000 Increase
Common stock (\$1 par)	60,000	60,000	—0—
Retained earnings	136,000	20,000	116,000 Increase
Total	<u>\$386,000</u>	<u>\$85,000</u>	

ILLUSTRATION 23-11 Income Statement, Tax Consultants Inc., Year 2

**TAX CONSULTANTS INC.**  
**INCOME STATEMENT**  
**FOR THE YEAR ENDED DECEMBER 31, 2010**

Revenues		\$492,000
Operating expenses (excluding depreciation)	\$269,000	
Depreciation expense	<u>21,000</u>	290,000
Income from operations		202,000
Income tax expense		<u>68,000</u>
Net income		<u>\$134,000</u>

**Additional Information**

- (a) The company declared and paid an \$18,000 cash dividend.
- (b) The company obtained \$150,000 cash through the issuance of long-term bonds.
- (c) Land, building, and equipment were acquired for cash.

**Step 1: Determine the Change in Cash**

To prepare a statement of cash flows from the available information, the first step is to determine the change in cash. As indicated from the information presented, cash decreased \$12,000 (\$49,000<sup>L</sup> \$37,000).

**Step 2: Determine Net Cash Flow from Operating Activities—Indirect Method**

Using the indirect method, we adjust net income of \$134,000 on an accrual basis to arrive at net cash flow from operating activities. Explanations for the adjustments to net income follow.



**Decrease in Accounts Receivable**

Accounts receivable decreased during the period, because cash receipts (cash-basis revenues) are higher than revenues reported on an accrual basis. To convert net income to net cash flow from operating activities, the decrease of \$10,000 in accounts receivable must be added to net income.

**Increase in Prepaid Expenses.**

When prepaid expenses (assets) increase during a period, expenses on an accrual-basis income statement are lower than they are on a cash basis income statement. The reason: Tax Consultants has made cash payments in the current period, but expenses (as charges to the income statement) have been deferred to future periods. To convert net income to net cash flow from operating activities, the company must deduct from net income the increase of \$6,000 in prepaid expenses. An increase in prepaid expenses results in a decrease in cash during the period.

**Increase in Accounts Payable.**

Like the increase in 2009, Tax Consultants must add the 2010 increase of \$35,000 in accounts payable to net income, to convert to net cash flow from operating activities. The company incurred a greater amount of expense than the amount of cash it disbursed.

**Depreciation Expense (Increase in Accumulated Depreciation).****Eliminate Noncash Income Statement Items**

Perhaps the most obvious example of the required adjustments, and one of the easiest, is the elimination of depreciation and amortization expense. Net income will have been reduced by depreciation and amortization expense, but the company did not have to pay out any cash related to these expenses. Therefore, the amount of depreciation and/or amortization expense that was charged against net income will need to be added back to net income in order to determine the net cash from operating activities (the cash basis income).<sup>(HK)</sup>

Note that the depreciation to be added back to net income is only the depreciation that was **expensed**. Manufacturing depreciation may be partially expensed in cost of goods sold (attached to units that were sold during the year) and partially capitalized in inventory (attached to units that were unsold at year end). Depreciation that was expensed will include (1) manufacturing depreciation expense in cost of goods sold\* and (2) sales and administrative depreciation expense. Any depreciation that was capitalized in inventory for units that were unsold at the end of the period will be an adjustment to ending inventory when the amount of change in inventory is calculated (discussed below). The total amount of depreciation capitalized in inventory and the depreciation amounts expensed in cost of goods sold and in sales and administrative expense need to be disclosed in the Notes to the Financial Statements.<sup>(HK)</sup>

\*When absorption costing is used in manufacturing, depreciation recorded on production assets is a fixed cost that is added to the cost of goods manufactured and is capitalized in inventory until the goods are sold. Thus, the cost of each unit produced includes some amount of depreciation. As each unit is sold, the depreciation attached to it moves to cost of goods sold on the income statement along with the other costs attached to the unit. Thus, a certain amount of depreciation recorded during production is included in inventory at each financial statement date and a certain amount is included in cost of goods sold....

Any other noncash items also need to be eliminated. Another type of non-cash adjustment to net income that needs to be reversed is **unrealized** gains or losses on trading securities. Unrealized gains and losses on trading securities arise because of changes in the market value of trading securities, and they are charged to net income in the period in which they occur. However, they do not represent any cash activity and therefore they need to be reversed.<sup>(HK)</sup>

The purchase of depreciable assets is a use of cash, shown in the investing section in the year of acquisition. Tax Consultant's depreciation expense of \$21,000 (also represented by the increase in accumulated depreciation) is a noncash charge; the company adds it back to net income, to arrive at net cash flow from operating activities. The \$21,000 is the sum of the \$11,000 depreciation on the building plus the \$10,000 depreciation on the equipment.<sup>(K)</sup>



Certain other periodic charges to expense do not require the use of cash. Examples are the amortization of intangible assets and depletion expense. Such charges are treated in the same manner as depreciation. Companies frequently list depreciation and similar noncash charges as the first adjustments to net income in the statement of cash flows. (K)

As a result of the foregoing items, net cash provided by operating activities is \$194,000 as shown in Illustration 23-12.

**ILLUSTRATION 23-12 Computation of Net Cash Flow from Operating Activities, Year 2—Indirect Method**

Net income		\$134,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	\$21,000	
Decrease in accounts receivable	10,000	
Increase in prepaid expenses	(6,000)	
Increase in accounts payable	35,000	60,000
Net cash provided by operating activities		<u>\$194,000</u>

**Step 3: Determine Net Cash Flows from Investing and Financing Activities**

After you have determined the items affecting net cash provided by operating activities, the next step involves analyzing the remaining changes in balance sheet accounts. Tax Consultants Inc. analyzed the following accounts.

**Increase in Land.** As indicated from the change in the land account, the company purchased land of \$70,000 during the period. This transaction is an investing activity, reported as a use of cash.

**Increase in Building and Related Accumulated Depreciation.** As indicated in the additional data, and from the change in the building account, Tax Consultants acquired an office building using \$200,000 cash. This transaction is a cash outflow, reported in the investing section. The \$11,000 increase in accumulated depreciation results from recording depreciation expense on the building. As indicated earlier, the reported depreciation expense has no effect on the amount of cash.

**Increase in Equipment and Related Accumulated Depreciation.** An increase in equipment of \$68,000 resulted because the company used cash to purchase equipment. This transaction is an outflow of cash from an investing activity. The depreciation expense entry for the period explains the increase in Accumulated Depreciation—Equipment.

**Increase in Bonds Payable.** The bonds payable account increased \$150,000. Cash received from the issuance of these bonds represents an inflow of cash from a financing activity.

**Increase in Retained Earnings.** Retained earnings increased \$116,000 during the year. Two factors explain this increase: (1) Net income of \$134,000 increased retained earnings, and (2) dividends of \$18,000 decreased retained earnings. As indicated earlier, the company adjusts net income to net cash provided by operating activities in the operating activities section. Payment of the dividends is a financing activity that involves a cash outflow.

**Statement of Cash Flows—2010**

Combining the foregoing items, we get a statement of cash flows for 2010 for Tax Consultants Inc., using the indirect method to compute net cash flow from operating activities.

**ILLUSTRATION 23-13 Statement of Cash Flows, Tax Consultants Inc., Year 2**



**TAX CONSULTANTS INC.  
STATEMENT OF CASH FLOWS  
FOR THE YEAR ENDED DECEMBER 31, 2010  
INCREASE (DECREASE) IN CASH**

Cash flows from operating activities		
Net income		\$134,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	\$ 21,000	
Decrease in accounts receivable	10,000	
Increase in prepaid expenses	(6,000)	
Increase in accounts payable	<u>35,000</u>	<u>60,000</u>
Net cash provided by operating activities		194,000
Cash flows from investing activities		
Purchase of land	(70,000)	
Purchase of building	(200,000)	
Purchase of equipment	<u>(68,000)</u>	
Net cash used by investing activities		(338,000)
Cash flows from financing activities		
Issuance of bonds	150,000	
Payment of cash dividends	<u>(18,000)</u>	
Net cash provided by financing activities		<u>132,000</u>
Net decrease in cash		(12,000)
Cash, January 1, 2010		<u>49,000</u>
Cash, December 31, 2010		<u><u>\$ 37,000</u></u>

**ILLUSTRATION-2011**

Our third example, covering the 2011 operations of Tax Consultants Inc., is more complex. It again uses the indirect method to compute and present net cash flow from operating activities.

Tax Consultants Inc. experienced continued success in 2011 and expanded its operations to include the sale of computer software used in tax-return preparation and tax planning. Thus, inventory is a new asset appearing in the company's December 31, 2011, balance sheet. Illustrations 23-14 and 23-15 show the comparative balance sheets, income statements, and selected data for 2011.



## ILLUSTRATION 23-14 Comparative Balance Sheets, Tax Consultants Inc., Year 3

TAX CONSULTANTS INC. COMPARATIVE BALANCE SHEETS AS OF DECEMBER 31			
Assets	2011	2010	Change Increase/Decrease
Cash	\$ 54,000	\$ 37,000	\$ 17,000 Increase
Accounts receivable	68,000	26,000	42,000 Increase
Inventories	54,000	—0—	54,000 Increase
Prepaid expenses	4,000	6,000	2,000 Decrease
Land	45,000	70,000	25,000 Decrease
Buildings	200,000	200,000	—0—
Accumulated depreciation—buildings	(21,000)	(11,000)	10,000 Increase
Equipment	193,000	68,000	125,000 Increase
Accumulated depreciation—equipment	(28,000)	(10,000)	18,000 Increase
Totals	<u>\$569,000</u>	<u>\$386,000</u>	
Liabilities and Stockholders' Equity			
Accounts payable	\$ 33,000	\$ 40,000	\$ 7,000 Decrease
Bonds payable	110,000	150,000	40,000 Decrease
Common stock (\$1 par)	220,000	60,000	160,000 Increase
Retained earnings	206,000	136,000	70,000 Increase
Totals	<u>\$569,000</u>	<u>\$386,000</u>	

## ILLUSTRATION 23-15 Income Statement, Tax Consultants Inc., Year 3

TAX CONSULTANTS INC. INCOME STATEMENT FOR THE YEAR ENDED DECEMBER 31, 2011		
Revenues		\$890,000
Cost of goods sold	\$465,000	
Operating expenses	221,000	
Interest expense	12,000	
Loss on sale of equipment	<u>2,000</u>	<u>700,000</u>
Income from operations		190,000
Income tax expense		<u>65,000</u>
Net income		<u>\$125,000</u>
<b>Additional Information</b>		
(a) Operating expenses include depreciation expense of \$33,000 and expiration of prepaid expenses of \$2,000.		
(b) Land was sold at its book value for cash.		
(c) Cash dividends of \$55,000 were declared and paid.		
(d) Interest expense of \$12,000 was paid in cash.		
(e) Equipment with a cost of \$166,000 was purchased for cash. Equipment with a cost of \$41,000 and a book value of \$36,000 was sold for \$34,000 cash.		
(f) Bonds were redeemed at their book value for cash.		
(g) Common stock (\$1 par) was issued for cash.		

**Step 1: Determine the Change in Cash**



The first step in the preparation of the statement of cash flows is to determine the change in cash. As the comparative balance sheets show, cash increased \$17,000 in 2011.

## **Step 2: Determine Net Cash Flow from Operating Activities—Indirect Method**

We explain the adjustments to net income of \$125,000 as follows.

**Increase in Accounts Receivable.** The increase in accounts receivable of \$42,000 represents recorded accrual-basis revenues in excess of cash collections in 2011. The company deducts this increase from net income to convert from the accrual basis to the cash basis.

### **Inventory**

An increase in inventory during the period indicates the company has paid cash for inventory items that have not yet been expensed as cost of goods sold. Therefore, the amount of increase in the inventory account needs to be subtracted from net income.<sup>(HK)</sup>

Similarly, a decrease in the inventory account needs to be added to net income.<sup>(HK)</sup>

If information on the amount of manufacturing depreciation included in ending inventory is given in the Notes to the Financial Statement, use it to **decrease** the ending inventory balance before calculating the amount of change in inventory to adjust net income. Beginning inventory should **not be decreased**, however, because the amount of depreciation included in beginning inventory resulted from noncash transactions recorded during the period **previous** to the one on which we are reporting. We back out only the noncash depreciation that is in ending inventory because only the depreciation in ending inventory was recorded during the period on which we are reporting.<sup>(HK)</sup>

**Increase in Inventories.** The \$54,000 increase in inventories represents an operating use of cash, not an expense. Tax Consultants therefore deducts this amount from net income, to arrive at net cash flow from operations. In other words, when inventory purchased exceeds inventory sold during a period, cost of goods sold on an accrual basis is lower than on a cash basis.

**Decrease in Prepaid Expenses.** The \$2,000 decrease in prepaid expenses represents a charge to the income statement for which Tax Consultants made no cash payment in the current period. The company adds back the decrease to net income, to arrive at net cash flow from operating activities.

**Decrease in Accounts Payable.** When accounts payable decrease during the year, cost of goods sold and expenses on a cash basis are higher than they are on an accrual basis. To convert net income to net cash flow from operating activities, the company must deduct the \$7,000 in accounts payable from net income.

**Depreciation Expense (Increase in Accumulated Depreciation).** Accumulated Depreciation—Buildings increased \$10,000 (\$21,000 - \$11,000). The Buildings account did not change during the period, which means that Tax Consultants recorded depreciation expense of \$10,000 in 2011.



Accumulated Depreciation—Equipment increased by \$18,000 (\$28,000 - \$10,000) during the year. But Accumulated Depreciation—Equipment decreased by \$5,000 as a result of the sale during the year. Thus, depreciation for the year was \$23,000. The company reconciled Accumulated Depreciation—Equipment as follows.

Beginning balance	\$10,000
Add: Depreciation for 2011	<u>23,000</u>
	33,000
Deduct: Sale of equipment	<u>5,000</u>
Ending balance	<u>\$28,000</u>

The company must add back to net income the total depreciation of \$33,000 (\$10,000 + \$23,000) charged to the income statement, to determine net cash flow from operating activities.

**Loss on Sale of Equipment. Tax Consultants Inc.** sold for \$34,000 equipment that cost \$41,000 and had a book value of \$36,000. As a result, the company reported a loss of \$2,000 on its sale. To arrive at net cash flow from **operating activities**, it must add back to net income the loss on the sale of the equipment. The reason is that the loss is a noncash charge to the income statement. The loss did not reduce cash, but it did reduce net income.

*A similar adjustment is required for unrealized gains or losses recorded on trading security investments or other financial assets and liabilities accounted for under the fair value option. Marking these assets and liabilities to fair value results in an increase or decrease in income, but there is no effect on cash flows.*

### Eliminate Investing and Financing Activity Events Included in the Income Statement

The income statement reports the results of all transactions that the company entered into during the period. However, some of those events are not operating activities. In calculating cash flows from operating activities using the indirect method, we need to eliminate all the items in the income statement that do not relate to operating activities. The events that need to be eliminated as non-operating activities are identified on the income statement as realized gains and losses.

The most common realized gains and losses on the income statement that are eliminated in determining cash flow from operating activities are:

- Realized gains or losses from the sale of equipment or other fixed assets,
- Realized gains or losses on the sale of securities classified on the SCF as operating activities,<sup>12</sup> and
- Realized gains or losses on the sale of securities classified on the SCF as investing activities.<sup>13</sup>

<sup>12</sup> Realized gains and losses on trading or other securities classified as operating activities on the SCF are removed because the full amount of the cash received will be used to adjust net income in the calculation of net cash flows from operating activities. The amount of the gain or the loss will be embedded in the amount of the cash received, so to report it twice would be double counting it.

<sup>13</sup> Unrealized gains and losses on available-for-sale securities are presented in accumulated other comprehensive income, a component of equity, and are not on the income statement. Unrealized gains and losses on held-to-maturity securities are not recognized on either the income statement or the balance sheet. Thus, the only gains and losses on the income statement for either available-for-sale or held-to-maturity securities will be realized gains and losses on securities that have been sold or otherwise disposed of. See the HOCK Assumed Knowledge e-book if you need further explanation of accounting for investments.

By definition, gains and losses arise from secondary business activities and are therefore not operating activities. They will most likely be included in cash flows from investing activities but could also arise from some financing activities. Any gains or losses on trading securities classified as operating activities will be included in the total cash received from the sale of the securities and in the total cash used in purchasing the securities, which are separate adjustments.





These gains and losses on the income statement need to be eliminated in full in the preparation of the cash flows from operating activities portion of the statement of cash flows when the indirect method is used. To eliminate gains and losses,

- gains are subtracted from net income, and
- losses are added back to net income.

Remember that each event that gave rise to a gain or loss will need to be included in the SCF in either the investing or financing activities section (or the operating activities section if for trading securities classified as operating activities).

### Cash Flows from the Purchase, Maturity and Sale of Trading Securities

Cash flows from the purchase, sale and maturity of trading securities are to be classified based on the nature and purpose for which the securities were acquired. Usually, this means they will be classified as operating activities, not investing activities. This classification as operating activities is not an absolute requirement, but if management considers it appropriate to classify them as operating activities, this will be another adjustment to reconcile net income to net cash from operating activities.<sup>(HK)</sup>

The amount of the cash outflow for a purchase is the amount of cash used for the purchase. The amount of the cash inflow for a sale or maturity is the full amount of the cash received.<sup>(HK)</sup>

From the foregoing items, the company prepares the operating activities section of the statement of cash flows, as shown in Illustration 23-16.

ILLUSTRATION 23-16 Operating Activities Section of Cash Flows Statement

Cash flows from operating activities		
Net income		\$125,000
Adjustments to reconcile net income to		
net cash provided by operating activities:		
Depreciation expense	\$33,000	
Loss on sale of equipment	2,000	
Increase in accounts receivable	(42,000)	
Increase in inventories	(54,000)	
Decrease in prepaid expenses	2,000	
Decrease in accounts payable	(7,000)	(66,000)
<b>Net cash provided by operating activities</b>		<b>59,000</b>

### Step 3: Determine Net Cash Flows from Investing and Financing Activities

By analyzing the remaining changes in the balance sheet accounts, Tax Consultants identifies cash flows from investing and financing activities.

**Land.** Land decreased \$25,000 during the period. As indicated from the information presented, the company sold land for cash at its book value. This transaction is an investing activity, reported as a \$25,000 source of cash.



**Equipment.** An analysis of the equipment account indicates the following.

Beginning balance	\$ 68,000
Purchase of equipment	<u>166,000</u>
	234,000
Sale of equipment	<u>41,000</u>
Ending balance	<u>\$193,000</u>

The company used cash to purchase equipment with a fair value of \$166,000—an investing transaction reported as a cash outflow. The sale of the equipment for \$34,000 is also an investing activity, but one that generates a cash inflow.

**Bonds Payable.** Bonds payable decreased \$40,000 during the year. As indicated from the additional information, the company redeemed the bonds at their book value. This financing transaction used \$40,000 of cash.

**Common Stock.** The common stock account increased \$160,000 during the year. As indicated from the additional information, Tax Consultants issued common stock of \$160,000 at par. This financing transaction provided cash of \$160,000.

**Retained Earnings.** Retained earnings changed \$70,000 ( $\$206,000 - \$136,000$ ) during the year. The \$70,000 change in retained earnings results from net income of \$125,000 from operations and the financing activity of paying cash dividends of \$55,000.

Statement of Cash Flows—2011

ILLUSTRATION 23-17 Statement of Cash Flows, Tax Consultants Inc., Year 3





**TAX CONSULTANTS INC.**  
**STATEMENT OF CASH FLOWS**  
**FOR THE YEAR ENDED DECEMBER 31, 2011**  
**INCREASE (DECREASE) IN CASH**

Cash flows from operating activities		
Net income		\$125,000
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation expense	\$ 33,000	
Loss on sale of equipment	2,000	
Increase in accounts receivable	(42,000)	
Increase in inventories	(54,000)	
Decrease in prepaid expenses	2,000	
Decrease in accounts payable	(7,000)	(66,000)
Net cash provided by operating activities		59,000
Cash flows from investing activities		
Sale of land	25,000	
Sale of equipment	34,000	
Purchase of equipment	(166,000)	
Net cash used by investing activities		(107,000)
Cash flows from financing activities		
Redemption of bonds	(40,000)	
Sale of common stock	160,000	
Payment of dividends	(55,000)	
Net cash provided by financing activities		65,000
Net increase in cash		17,000
Cash, January 1, 2011		37,000
Cash, December 31, 2011		<u>\$ 54,000</u>

**SOURCES OF INFORMATION FOR THE STATEMENT OF CASH FLOWS**

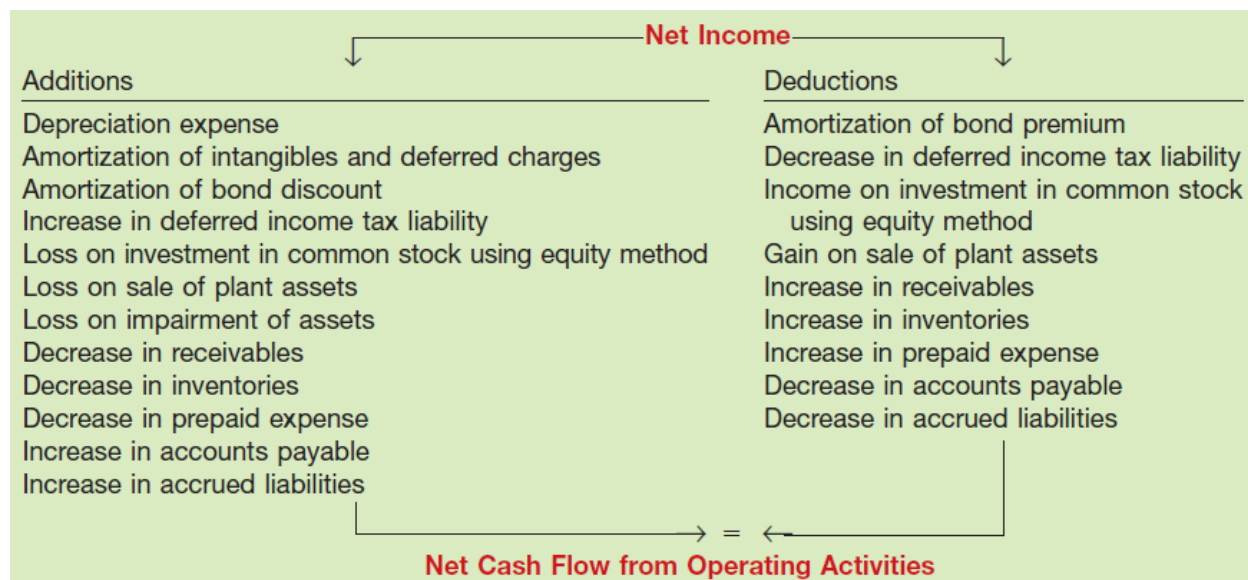
Important points to remember in the preparation of the statement of cash flows are these:

1. **Comparative balance sheets** provide the basic information from which to prepare the report. Additional information obtained from analyses of specific accounts is also included.
2. An **analysis of the Retained Earnings account** is necessary. The net increase or decrease in Retained Earnings without any explanation is a meaningless amount in the statement. Without explanation, it might represent the effect of net income, dividends declared, or prior period adjustments.
3. The statement includes all changes that have passed through cash or have resulted in an increase or decrease in cash.
4. **Write-downs, amortization charges**, and similar “book” entries, such as depreciation of plant assets, represent neither inflows nor outflows of cash, because they have no effect on cash. To the extent that they have entered into the determination of net income, however, the company must add them back to or subtract them from net income, to arrive at net cash provided (used) by operating activities.

**Indirect Method- Additional Adjustments**

For consistency and comparability and because it is the most widely used method in practice, we used the indirect method in the examples just presented. We determined net cash flows from operating activities by adding back to or deducting from net income those items that had no effect on cash. Illustration 23-18 presents more completely the common types of adjustments that companies make to net income to arrive at net cash flow from operating activities.

The additions and deductions in Illustration 23-18 reconcile net income to net cash flow from operating activities, illustrating why the indirect method is also called the reconciliation method.

**ILLUSTRATION 23-18 Adjustments Needed to Determine Net Cash Flow from Operating Activities—Indirect Method**



## Rules for Increases and Decreases in Asset and Liability Accounts

Below is a set of rules for the way net income is adjusted for changes in various assets and liabilities. These rules can be used for any operating activity asset or liability account when using the indirect method for calculating net cash flows from operating activities.

The following rules apply for adjusting net income:

### Assets:

- The amount of an **increase** in an asset should be **deducted** from net income.
- The amount of a **decrease** in an asset should be **added** to net income.

### Liabilities:

- The amount of an **increase** in a liability should be **added** to net income.
- The amount of a **decrease** in a liability should be **deducted** from net income.

**Note:** The rule is that assets adjust net income to cash flow in the opposite way that the account balance changes, whereas liabilities adjust net income to cash flow in the same direction as the account balance changes.

### Additional Indirect Method Considerations

Other items that you need to pay particular attention to are the **bond discount or premium account** and the **deferred tax asset or liability account(s)**. Changes in these accounts require adjustments to the net income figure just like other assets and liabilities do.

However, remember that bond discounts are **decreases** in the valuation of the bond on the balance sheet, whether they are contra-assets (to a bond carried as an investment asset) or contra-liabilities (to a bond issued by the company as debt and carried as a liability). They are thus carried as negative balances. Regular amortization of the discount **increases** the valuation of the related asset or liability. Even though discount amortization causes the balance in the contra account to decrease toward zero on an absolute basis, the amortization results in an **increase** to the net carrying value of the asset or liability.

Bond premiums work the opposite way. They increase the valuation of the bond on the balance sheet. As the premium is amortized, the amount in the valuation account decreases toward zero and the amortization results in a decrease to the net carrying value of the asset or liability.

Changes to deferred tax assets and deferred tax liabilities represent amounts that have been recorded in net income but have not affected cash. Those change amounts should be added to or deducted from net income in accordance with the basic asset and liability rules given above.<sup>(HK)</sup>

### Disclosures

When the indirect method is used to prepare the SCF, the amount of cash paid for taxes and the amount of cash paid for interest must be disclosed because the cash paid for income taxes and for interest will be included in the Net Cash Flows from Operating Activities line on the SCF, and users need to know their individual amounts. This disclosure will be done at the end of the SCF as a supplemental schedule.<sup>(HK)</sup>

### Summary – Cash Flows from Operating Activities Under the Indirect Method

Below is a summary of the steps followed in preparing the operating activities section under the indirect method. They are presented here to help you see how all of the items discussed above fit together.

- Add all depreciation and amortization expense back to net income.
- Add all non-operating losses on the income statement back to net income.



- Subtract all non-operating gains on the income statement from net income.
- Add and subtract the changes in balance sheet accounts that are related to operating activities – net accounts receivable, accounts payable, inventory, other payables and receivables, bond discount or premium, and other assets and liabilities. All of these items are adjustments to net income in accordance with the rules set out in the Rules for Increases and Decreases in Asset and Liability Accounts above.
- If purchases, sales and maturities of trading securities are being classified as operating activities, subtract cash used to purchase trading securities and add cash received for trading securities that were sold or that matured.
- In addition to the above adjustments, the cash amounts for income taxes paid and interest paid need to be disclosed in a supplemental schedule.

**Exam Tip:** If an exam problem requires the use of the indirect method and does not give the amount of net income for the period, net income can usually be calculated by analyzing the amount of change in retained earnings from one year to the next. Retained earnings are increased by net income and reduced by any dividends declared during the period. Therefore, if you know the beginning and ending retained earnings balances and the amount of dividends declared, if any, you can calculate the amount of net income for the period.

### Noncash Investing and Financing Activities

Some investing and financing activities are not included on the face of the statement of cash flows (meaning within the statement itself) because they are **noncash** investing or financing transactions. As the name implies, noncash transactions are transactions that are either investing or financing in nature but did not involve cash in the transaction. <sup>(HK)</sup>

Examples of noncash investing and financing transactions are:

- Debt converted to equity.
- Borrowing money to purchase a fixed asset when the lender pays the loan proceeds directly to the seller of the asset to make sure the loan proceeds are used as intended.
- Buying or selling fixed assets for something other than cash (for example, stock).
- Obtaining a building or other item by gift.
- Exchanging noncash assets or liabilities for other noncash assets or liabilities.

Despite the fact that no cash is involved in these transactions, they need to be disclosed in the statement of cash flows. Noncash investing or financing activities must be presented **separately in a schedule at the end of the statement of cash flows**. This disclosure is required because these events may be very important for a potential investor to know about. For example, if the company makes a practice of issuing new shares to acquire fixed assets, the disclosure of that fact will let the potential investor know that his or her ownership share will be diluted as the company buys fixed assets. <sup>(HK)</sup>

### Cash Equivalents on the Statement of Cash Flows

A cash equivalent is defined as a highly liquid, short-term investment that is easily converted into a known amount of cash without significant loss in value. The definition usually includes only those investments that have a **maturity of 3 months or less from the date the company acquires the investment**. For example, if a company acquires a 20-year Treasury bond 2 months before it matures, the Treasury bond will be classified as a cash equivalent on the balance sheet and for the purposes of the statement of cash flows. However, if the company acquires a 20-year Treasury bond 2 years before



its maturity date, that Treasury bond will never be classified as a cash equivalent on the company's balance sheet or statement of cash flows, even when it reaches 3 months before its maturity date, because its maturity date was not within 3 months of the date it was acquired. (HK)

Common examples of cash equivalents are money market funds, commercial paper and Treasury Bills.

In the preparation of the statement of cash flows, cash equivalents are considered to be cash and are therefore treated as cash. The beginning balance and ending balance of cash on the statement of cash flows includes funds classified as both cash and cash equivalents on the statement of financial position. Therefore, the **purchase or sale of cash equivalents will not be reflected in the statement of cash flows**, since those purchase and sale transactions are simply exchanging one form of cash for another form of cash. (HK)

Furthermore, in the statement of cash flows, cash and cash equivalents are to be described specifically as "cash and cash equivalents," not simply as "cash" or "funds." (HK)

### **Cash Flows in Foreign Currencies**

For cash flows in foreign currencies, the exchange rate that was in effect at the time of the cash flow should be used. However, if the average exchange rate gives a similar result, the average may be used. (HK)



Sec.A.  
15%

## Gleim U 2.1 Accounts Receivable

### Receivables CMA EXAMINATION

Define receivables and identify the different types of receivables.

Receivables are claims held against customers and others for money, goods, or services. The receivables are classified into three types:

- (1) current (short-term) or noncurrent (long-term),
- (2) trade or nontrade,
- (3) accounts receivable or notes receivable.

**Receivables** are claims held against **customers** (owed to the company by customers) and **others** for money, goods, or services..(K,N)

**Accounts receivable (A/R)** is a subset of receivables and is detailed in this section. Receivables result from sellers extending credit to buyers in order to increase sales. Receivables are considered liquid but not as liquid as cash because some accounts probably will not be paid.

Receivables are classified as current or noncurrent, trade or nontrade.

**Trade receivables** include **accounts receivable** and **notes** receivable. Each of these classifications is detailed below.

Current receivables are due to be collected within the longer of a year or the current operating cycle. Noncurrent receivables are due after one year or the current operating cycle, whichever is longer.

Explain accounting issues related to **recognition** of accounts receivable.

### Timing of Recognition

The timing of recognition of accounts receivable is closely related to the **recognition of revenue**, since a receivable is created at the same time as a sale is recorded unless payment for the sale is received in cash.

Most receivables are canceled through the receipt of cash, although others may be canceled through the receipt of other assets or services..(N)

Two issues that may complicate the **measurement** of accounts receivable are:

- (1) The availability of discounts (trade and cash discounts), and
- (2) the length of time between the sale and the payment due dates (the interest element).

Ideally, companies should measure receivables in terms of their **present value** that is, the discounted value of the cash to be received in the future. The profession specifically *excludes* from the present-value considerations receivables arising from **normal business** transactions that are due in customary trade terms within approximately one year.



**Explain accounting issues related to valuation of accounts receivable.**

Companies value and report short-term receivables at **net realizable value** the net amount expected to be received in cash, which is not necessarily the amount legally receivable.

**CMA Examination**

- A. Identify issues related to the valuation of accounts receivable, including timing of recognition and estimation of uncollectible accounts.

a. GAAP requires that accounts receivable be carried on the balance sheet at **net realizable value (NRV)**. NRV is gross accounts receivable less the allowances for uncollectible accounts, returns and allowances, and discounts.

**Note: Noncurrent receivables** are measured at **net present value** of future cash flows.

Allowances for returns and allowances and discounts are **not** covered on the CMA examination.

- **Determining net realizable value requires estimating uncollectible receivables.**

**CMA examination**

- B. Determine the financial statement effect of using the percentage-of-sales (income statement) approach as opposed to the percentage-of-receivables (balance sheet) approach in calculating the allowance for uncollectible accounts.
- a. GAAP allows either approach noted above for the determination of uncollectible expense and the allowance for uncollectible accounts. The percentage-of-sales method calculates the uncollectible expense and credits the allowance to determine the balance in the allowance account. The percentage-of-receivables method calculates the ending balance in the allowance account and "backs" into the uncollectible expense.

**Explain accounting issues related to disposition of accounts and notes receivable.**

To accelerate the receipt of cash from receivables, the owner may transfer the receivables to another company for cash in one of two ways:

(1) **Secured borrowing:** A creditor often requires that the debtor designate or pledge receivables as security for the loan.

(2) **Sales (factoring) of receivables:** Factors are finance companies or banks that buy receivables from businesses and then collect the remittances directly from the customers. In many cases, transferors may have some continuing involvement with the receivable sold. Companies use a financial components approach to record this type of transaction.

**CMA examination**

- C. Distinguish between receivables sold (factoring) on a with-recourse basis and those sold on a without-recourse basis, and determine the effect on the balance sheet.





a. Factoring without recourse transfers the ownership of the receivable to the factor and removes it from the balance sheet. When factoring with recourse, rights of ownership remain with the original owner of the receivable and are not transferred to the factor. The receivable then remains on the original owner's balance sheet.



## **ACCOUNTS RECEIVABLE** (open accounts) <sup>1</sup>

Accounts receivable are oral promises to pay for a good or service delivered (i.e., oral promises to pay debts).

### **Generally classified as current assets<sup>2</sup>:**

Most receivables have 30- or 60-day net payment terms and therefore are usually current receivables, but wide variations exist in terms.

### **Recognition of Accounts Receivable**

Revenue is recognized at the **point-of-sale**, or when the customer receives the item, consistent with the accrual method of accounting.

- Seller will write the inventory off its books and **recognize revenue and a receivable** as soon as the goods are turned over to the carrier if the goods are shipped **FOB Shipping Point**.
- Seller will **not** recognize revenue or a receivable until the goods have been delivered to the buyer by the carrier if the goods are shipped **FOB Destination**.
- Associated **cost of goods sold** must be recognized in the same period as the revenue is recognized.

## **VALUATION OF ACCOUNTS RECEIVABLE**

Companies value and report short-term receivables at **net realizable value** the **net amount they expect to receive in cash**.

### **Determining net realizable value involves estimation of**

- (1) any returns or allowances to be granted, and
- (2) uncollectible receivables.

The net amount expected to be received in cash may be different from the amount legally receivable.<sup>(HK)</sup>

### **(1) Allowance for Customers' Right of Sales Return**

- A provision must be made for the return of merchandise because of product defects, customer dissatisfaction.

To be consistent with the **matching principle** (recognition of revenue and related expense in the same accounting period),

- If past experience shows that a **material percentage** of receivables are returned, an **allowance for sales returns** should be established.
  - the revenue from the sale of goods and the **expense for the estimated sales returns** must be recognized on the same date.

<sup>1</sup> Trade receivables include accounts receivable and notes receivable. Trade receivables are the most common form of receivable because they arise from the **normal operations** of an entity: credit sales of goods and services.

<sup>2</sup> they are expected to be collected within 1 year or the entity's normal operating cycle whichever is longer.





## EXAMELB

A company has \$500,000 of sales in July, its first month of operations. Management estimates that total returns will be 1% of sales

### Recognition of revenue from sale

Cash/accounts receivable \$500,000  
Sales \$500,000

### Recognition of allowance for sales returns

Sales returns (contra revenue) \$5,000  
Allowance for sales returns (contra asset) \$5,000

### Journal entry to record a sales return:

Sales returns and allowances (contra sales) \$150

Accounts receivable \$150

### (2) Estimating Uncollectible Accounts Receivable

Accounts receivable should be presented on the balance sheet at their net realizable value. Thus, the amount recorded at **initial transaction (Gross A/R)** should be **reduced** by the amount of any uncollectible receivables. Two methods of recognizing uncollectible accounts receivable exist (the direct write-off method and the allowance method); however, only the allowance method is consistent with accrual accounting (and thus acceptable for GAAP).

The allowance account should have a negative balance, and, when combined with the **gross accounts receivable** account, it serves to decrease the value of net accounts receivable.

The **estimated collectible** amount is called "**net receivables**" and usually only the net receivable amount is presented on the balance sheet.

#### ABC Corporation Balance Sheet (partial)

##### Current Assets:

Cash		\$	330
Accounts receivable	500		
Less: Allowance for doubtful accounts	(25)		475
Inventory			812
Prepaid expense			40
Total current assets			1,657

**Gross**  
**- Allow**  
**NRV**

## Methods of Accounting for Uncollectible Accounts

### Direct Write-Off

Theoretically deficient:

- ◆ No matching.
- ◆ Receivable not stated at cash realizable value.
- ◆ Not GAAP when material in amount.

### Allowance Method

Losses are estimated:

- ◆ Percentage-of-sales.
- ◆ Percentage-of-receivables.
- ◆ GAAP requires when material in amount.



## 1. Direct Write-off Method (not GAAP) **No accrual Tax-reg. Wait actual**

Under the direct write-off method, the account is written off and the bad debt is recognized when the account becomes uncollectible. The direct write-off method is not GAAP because it does not properly match the bad debt expense with the revenue (note, however, that the direct write-off method is the method used for federal income tax purposes). An additional weakness of this method is that accounts receivable are always **overstated** because no attempt is made to account for the unknown bad debts included in the balance on the financial statements. But according to GAAP a company needs to make sure that its assets are **not overstated** (this is the principle of conservatism).

### EXAMPLE

On December 15, Year 1, Roe Company recorded a credit sale of \$10,000. On July 1, Year 2, the company determined that the account receivable was uncollectible. The following journal entry is recorded in Year 2 to write-off the bad debt. The revenue recorded in Year 1 is not properly matched to the bad debt expense recorded in Year 2.

Journal entry to record the account balance of \$10,000 as uncollectible:

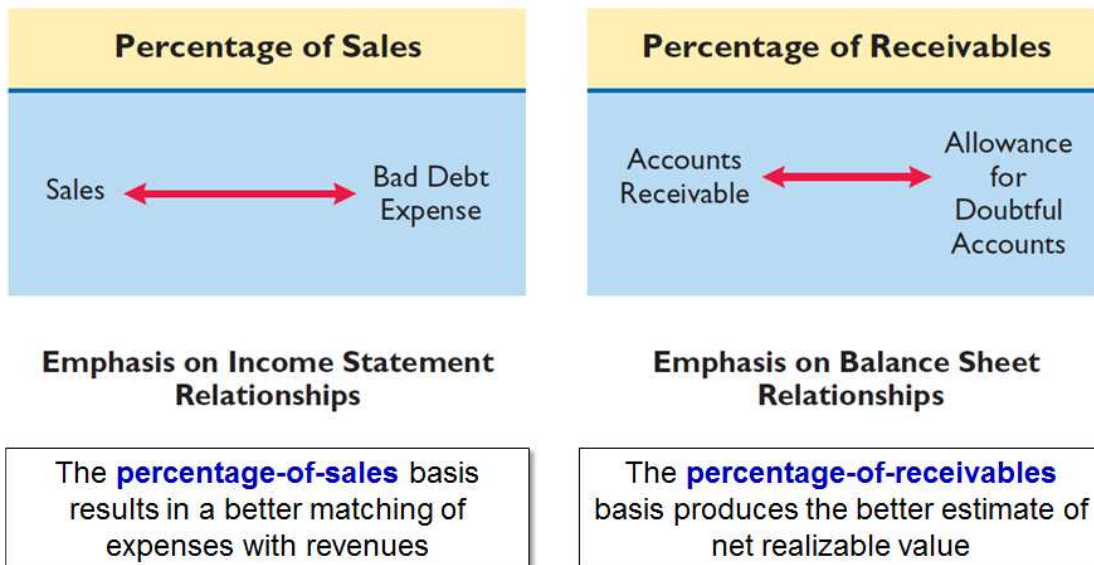
DR Bad debt expense	↑ NI ↓	\$10,000
CR Accounts receivable	A ↓	\$10,000

## \* **Accrual**

### 2. Allowance Method (GAAP)

### **“Matching”**

The allowance for uncollectibles should be based on past experience. A percentage of each period's sales or ending accounts receivable is estimated to be uncollectible. Consequently, the amount determined is charged to bad debts of the period and the credit is made to a valuation account such as "allowance for uncollectible accounts." When specific amounts are written off, they are debited to the allowance account, which is periodically recomputed. There are three generally accepted methods of estimating uncollectible or doubtful accounts under the allowance method.





**Under both methods, we do all of the following:**

- Determine the amount of **receivables** that will not be collected in the future.
- Determine the **bad debt expense** that the company needs to recognize on the income statement in this period.
- Record a debit to an expense account called bad debt expense and a credit to the allowance for doubtful debts account.

Management needs to decide for itself which method results in a **more accurate** valuation of its net accounts receivable, and then it needs to **use that method consistently**.



- a. **Percentage of Sales Method** (income statement approach)
- Percentage based upon past experience and anticipate credit policy.
    - Under the percentage of sales method, a percentage of each sale is debited to the account "bad debt expense" and credited to the account "allowance for doubtful accounts."
  - Achieves better **matching** of expenses with revenues.
  - Any balance in Allowance for Doubtful Accounts is **ignored**.

- Allow. + a.

0 w/os	Beg. 1 C/Y BDE % sales 4
	End 5

## EXAMPLE

ABC Co. bases estimated uncollectible accounts on total credit sales for the period. ABC Co. estimates that 1% of its \$800,000 sales on credit will not be collected. The credit balance in the allowance for uncollectible accounts before adjustment is \$1,723.

Journal entry to record increase in allowance account:

Bad debt expense	\$8,000	
Allowance for uncollectible accounts		\$8,000

Beginning balance in allowance for uncollectible accounts	\$1,723
Additions as a result of new credit sales	<u>\$8,000</u>
<b>Ending balance in allowance</b> for uncollectible accounts	<u><b>\$9,723</b></u>

Bad Debt Expense		Allowance for Doubtful Accounts	
Dec. 31 Adj.	8,000	Jan. 1 Bal.	1,723
		Dec. 31 Adj.	8,000
		Dec. 31 Bal.	9,723

The **ending balance in the allowance** account is the beginning balance adjusted

- by any **accounts written off during** the period (debits to the allowance account) and
- by the **bad debt expense** recorded for the period (a credit to the allowance account).

The **ending balance in the allowance account becomes a balancing figure (residual figure)**.

The T-account for the percentage of sales method is below.

## Allowance for Doubtful Accounts - % of Sales

(2) Amount actually written off as bad debts for the year.	(1) Beginning balance.
	(3) Collection of previously written-off bad debts.
	(4) Amount to be charged as bad debt expense for the period <b>as calculated</b> from the amount of credit sales.
	(5) Ending balance ( <b>residual figure</b> ).

**The steps in the percentage of sales method are as follows:**

- 1) Calculate the bad debt expense for the period as a percentage of total credit sales.
- 2) Make the journal entry to debit bad debt expense for the calculated bad debt expense amount and credit the allowance for doubtful debts for the same amount.
- 3) Calculate the ending balance in the allowance account.
- 4) Check the reasonableness of the allowance account balance.

a company focuses on making the

## ending balance in the allowance

account and "backs" into the uncollectible expense.

### b. Percentage of Accounts Receivable at Year-end Method (balance sheet approach)

Uncollectible accounts may also be estimated as a certain percentage of accounts receivable at year-end. Note that under this method, the amount of the estimated allowance calculated is the ending balance that should be in the allowance for doubtful accounts on the balance sheet. Therefore, the difference between the unadjusted balance and the desired ending balance is debited (or credited) to the **bad debt expense** account.

- ◆ Not matching.
- ◆ Reports estimate of receivables at realizable value.

Companies may apply this method using

- ◆ one composite rate, or
- ◆ an **aging schedule** using different rates.

①

Gross A/R  
- Required end. allow.  
NRV

②

Allow.	
w/os 0	Beg. C/Y BDE "Plug"
End ←	

### EXAMPLE

DEF Co. uses a percentage for uncollectibles based on the year-end balance in accounts receivable. DEF Co. estimates that the balance in the allowance account must be 2% of yearend accounts receivable of \$80,000. The balance in the allowance account is \$1,000 credit before adjustment.

The amount of **bad debt expense** the company records is whatever amount is needed to change the unadjusted balance in the allowance account to a balance that will create the correct net accounts receivable figure when the allowance account is combined with the accounts receivable account. (A certain amount of "working backwards" is necessary in this calculation.) Under this method, the **bad debt expense figure** on the income statement **becomes the balancing figure**.

The amount to be credited to the allowance accounts is calculated below.

Required ending balance (\$80,000 × .02)	Step 1 <span style="border: 1px solid red; padding: 2px;">\$1,600</span>
Existing balance before adjustment	(1,000)
Credit to allowance account needed	<u>\$ 600</u>

Journal entry to record increase in allowance account

<b>DR</b>	Bad debt expense	Step 2	\$600	
<b>CR</b>	Allowance for uncollectible accounts		\$600	

Note: If the \$1,000 balance in the allowance account had been a debit, we would have added it to the required ending balance. The entry would have then been for \$2,600.

Allow.	
	1,000 (Plug)
w/os 0	+ 600
1,600	

**Emphasizes asset valuation NRV****c. Aging of Receivables Method (balance sheet approach)**

Another method that can be used in estimating uncollectible accounts is aging of accounts receivable. A schedule is prepared categorizing accounts by the number of days or months outstanding. Each category's total dollar amount is then multiplied by a percentage representing uncollectibility based on past experience. The sum of the product for each aging category will be the desired ending balance in the allowance account.

**Step 1****EXAMPLE**

The balance in the allowance account before adjustment is \$1,000 credit. The analysis of the aging of receivables requires the allowance account to have a net balance of \$1,600.

Classification by Due Date	Balances in Each Category	Estimated % Uncollectible	Estimated Uncollectible Account	Allow.
Current	\$10,000	X .01 =	\$ 100	Beg.
31-61 days	6,667	X .03 =	200	C/Y BDE
61-90 days	5,000	X .10 =	500	w/os "Plug"
Over 90 days	4,000	X .20 =	800	End
	<u>\$25,667</u>		<u>\$1,600</u>	1,600

*Required end. bal. (\$1,600)*

Summarized from an analysis of individual invoices. The journal entry would be the same as that shown in the previous example.

The T-account for the Percentage of Accounts Receivable Method is below.

**Allowance for Doubtful Accounts - Percentage of receivables**

	(1) Beginning balance.
(2) Amount actually written off as bad debts for the year.	(3) Amount to be charged as bad debt expense for the period ( <b>residual figure</b> ).
	(4) Collection of previously written-off bad debts.
	(5) Ending balance <b>calculated</b> using ending A/R.

**The steps in the percentage of receivables method are:**

- 1) Calculate what the **ending balance in the allowance** account should be using some percentage of ending accounts receivable.
- 2) Determine what the **"plug figure"** in the allowance account needs to be in order for the ending balance in the account to be as calculated in Step 1. This "plug figure" is the **bad debt expense** for the period.
- 3) Make the journal entry to debit bad debt expense for the amount calculated as bad debt expense in Step 2 and credit the allowance for doubtful debts account for the same amount.

**D. Bad Debt Expense**

The amount charged to **earnings** for the bad debt expense of the period usually includes these two items:

- 1 . The provision made d u ring the period, and
- 2 . A n adjustment made a t year-end to increase/decrease the balance in the allowance for uncollectible accounts, if needed.

**E. Write-off of a Specific Account Receivable****Under “allow.” Method GAAP**

When an account finally goes bad and we become aware of the entity that is not going to pay us, we are able to write off that individual receivable.

Gross A/R ↓

- Allow. ↓

---

NRV N/C

When a receivable is formally determined to be uncollectible, the following entry is made:

DR	Allowance for doubtful accounts	\$XXX	
CR	Accounts receivable	\$XXX	

]

N/A on IS

The journal entry above

- **does not record any expense** (at the time of write-off) because the expense was already recognized when the allowance account was set up and the bad debt expense account was debited.
- The write-off confirms the previously estimated loss, so the **net carrying value of accounts receivable on the balance sheet is not affected**.
  - **No effect on working capital**



**F. Subsequent Collection of Accounts Receivable Written Off**

If a collection is made on a receivable that was previously written off, the accounting procedure depends upon the method of accounting used .

**1 . Direct Write-off Method****Tax****Not GAAP**

Journal entry is as follows:

Cash	\$ XXX	
Uncollectible accounts recovered		\$ XXX

The "uncollectible accounts recovered" account is a revenue account.

**2. Allowance Method****GAAP**

In this case, the company makes two journal entries. The first is to reverse the writing off of the receivable that was made in *E. Write-off*) above.

The first journal entry is:

To restore the account previously written off: <b>Reverse w/o</b>			
DR	Accounts receivable	\$XXX	
CR	Allowance for uncollectible accounts		\$XXX

**Step 1 A/R ↑**

The allowance account must be increased because this item, which we thought was one that would not be collected, was in fact collected. So, it must be a different receivable that will not be collected and should therefore be included in the allowance account.

The second journal entry is:

To record the cash collection on the account:			
DR	Cash	\$XXX	
CR	Accounts receivable		\$XXX

**Step 2 A/R ↓  
offset A/R N/C**

As you may have noticed, both of these entries involve the accounts receivable account, one a debit and the other a credit, and they are for the same amount. Therefore, we can combine these two journal entries into just one journal entry as follows:

Dr Cash ..... X

Cr Allowance for Doubtful Debts ..... X



3. Allowance for Doubtful Accounts Account Analysis Format *Use "T" account*

Beginning balance	\$100,000	100,000	100,000	100,000?
Add: Bad debt expense	+ 3,000	3,000	3,000?	3,000
Recoveries of bad debts	+ 0	0	0	0
Subtotal	103,000	103,000	103,000	103,000
Less: Accounts receivable written off	< 2,000 >	2,000?	2,000	2,000
Ending balance	101,000?	101,000	101,000	101,000

(Note the different scenarios with missing information.)

## EXAMPLE—CALCULATION OF BAD DEBT EXPENSE

Bost Company, at December 31, Year 5, adopted a new accounting method for estimating the allowance for uncollectible accounts using the percentage of accounts considered uncollectible in the year-end aging of accounts receivable.

The following data are available:

Allowance for uncollectible accounts, 1/1/Year 5	\$20,000
Provision for uncollectible accounts during Year 5 (2% of credit sales of \$700,000)	14,000
Bad debts written off, 11/30/Year 5	12,500
Estimated total of uncollectible accounts, per aging at 12/31/Year 5	20,500

After year-end adjustments, the Year 5 bad debt expense would be:

<u>Allowance</u>	
Balance, 1/1/Year 5	\$20,000
Plus: Year 5 provision	14,000
Less: Year 5 write-offs	(12,500)
Preliminary balance	21,500
Desired balance	(20,500)
Decrease needed	\$ 1,000
<u>Provision</u>	
Original provision	\$14,000
Less: necessary adjustment	(1,000)
Year 5 bad debt expense	\$13,000

Journal entry to record the write off of bad debts at November 30, Year 5:

DR	Allowance for uncollectible accounts	\$12,500	
CR	Accounts receivable		\$12,500

Journal entry to record the adjustment at December 31, Year 5:

DR	Allowance for uncollectible accounts	↓ NRV ↑	\$1,000	
CR	Bad debt expense	↓ Profit ↑		\$1,000

↓ Allow. ↑	
20 Beg.	
0 recovery	
w/os 12.5	14 C/Y BDE
Plug ↓	Plug ↑
1	
	20.5 End

## Receivables as an Immediate Source of Cash: Factoring

### G. Pledging (Assignment)

**Dr: Cash**  
**Cr: Note payable**

#### Footnote

Pledging is the process whereby the company uses existing accounts receivable as collateral for a loan. The company retains title to the receivables but "pledges" that it will use the proceeds to pay the loan. Pledging requires only note disclosure. The accounts receivable account is not adjusted.

At times a company that holds a receivable will be in need of cash immediately. When this situation arises, one of the company's options is to "sell" its accounts receivable. Factoring is the most frequently used form of selling receivables. **Factoring** is a transfer of receivables to a third party (a factor) who assumes the responsibility of collection.

### H. Factoring of Accounts Receivable

Without - sale  
 With - Sale or loan


Factoring is a process by which a company can convert its receivables into cash by assigning them to a "factor" either without or with recourse. Under factoring arrangements, the customer *may or may not* be **notified**.

#### 1. Without Recourse True Sale, Traditionally, factoring is without recourse

If a sale is non-recourse, it means that the sale is **final** and that the assignee/transferee (the factor/ credit agency) assumes the **risk** of any losses on collections and receives the rewards of collection. If the buyer is unable to collect all of the accounts receivable, it has no recourse against the seller as the seller has no further liabilities to the transferee, therefore the loss is the factor's loss. Some companies factor their receivables primarily for the purpose of *transferring the bad debt risk in this manner*.

Factoring discounts receivables on a **nonrecourse**, notification basis. Thus, payments by the debtors on the transferred assets are made to the factor. If the transferor (seller) surrenders control, the transaction is a sale. Accordingly, the receivables are no longer reported on the seller's books.

✱

Journal entry to factor accounts receivable without recourse:			
<b>DR</b>	Cash	\$XXX	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <b>Security</b>   </div> <div style="text-align: right;">           94 1 5 100         </div> </div>
<b>DR</b>	Due from factor (factor's margin)	\$XXX	
<b>DR</b>	Loss on sale of receivable	\$XXX	
<b>CR</b>	Accounts receivable	\$XXX	

The entry to the asset account "Due from Factor" reflects the proceeds retained by the factor. This amount protects the factor against sales returns, sales discounts, allowances, and customer disputes.



### EXAMPLE

A factor charges a 2% fee<sup>3</sup> plus, an interest rate of 18% on all cash advanced to a transferor of accounts receivable<sup>4</sup>. Monthly sales are \$100,000, and the factor advances 90% of the receivables<sup>5</sup> submitted after deducting the 2% fee and the interest.

Credit terms are net 60 days. What is the cost to the transferor of this arrangement?

Amount of receivables submitted	\$100,000
Minus: 10% reserve	(10,000)
Minus: 2% factor's fee	(2,000)
Amount accruing to the transferor	\$88,000
Minus: 18% interest for 60 days	<u>(2,640)</u> [ $\$88,000 * 18\% * (60/360)$ ]
Amount to be received immediately	<u>\$85,360</u>

The transferor also will receive the \$10,000 reserve at the end of the 60-day period if it has not been absorbed by sales returns and allowances. Thus, the total cost to the transferor to factor the receivables for the month is \$4,640 (\$2,000 factor fee + interest of \$2,640). Assuming that the factor has approved the customers' credit in advance (*the sale is without recourse*), the transferor will not absorb any bad debts.

The journal entry to record the preceding transaction is

Cash	\$85,360	
Due from factor	10,000	
Loss on sale of receivables	2,000	
Prepaid interest	2,640	
Accounts receivable		\$100,000

The main reasons for factoring transactions are as follows:

- 1) A factor usually receives a high financing fee plus a fee for collection. Furthermore, the factor often operates more efficiently than its clients because of the specialized nature of its services.
- 2) An entity (seller) that uses a factor tries to speed up its collections. Also, it can eliminate its credit department and accounts receivable staff. In addition, bad debts are eliminated from the financial statements. These reductions in costs can offset the fee charged by the factor.

<sup>3</sup> The factor charges a commission, called a factoring fee, usually of between 1% and 3% of the receivables sold. The factoring fee covers administrative costs and, if the receivables are sold without recourse, the factoring fee will be higher because it will also cover the risk of nonpayment. Thus when receivables are sold without recourse, the factoring fee is higher.

<sup>4</sup> The funds available to the seller from the factoring are deposited to the seller's account with the factor. The seller of the receivables may leave the funds on deposit with the factor until the average maturity date of the receivables, or the seller may withdraw the funds before the receivables' maturity date. If the seller withdraws the funds before the receivables' maturity date, the seller is utilizing the factor's lending function and will owe **interest** on the funds advanced. If the seller leaves the funds on deposit until the average maturity date of the receivables, the seller will owe no interest.

<sup>5</sup> The factor does not credit the seller for the full face value of the receivables it purchases. The factor deducts its factoring fee and holds back a percentage of the receivables to cover merchandise that may be returned to the seller, because receivables for returns will not be collectible by the factor. The factor's holdback is considered to represent receivables "retained" by the seller. At the end of the return privilege period, any amount not used by the factor to cover returns will be paid to the seller.

**2. With Recourse****Sale or loan- A/R collateral**

If a sale is on a recourse basis, it means that

- the factor has an option to re-sell any uncollectible receivables back to the seller.
- the transferor (seller) may be required to make payments to the transferee or to buy back receivables in specified circumstances.
- In this circumstance the transfer might *not qualify as a sale*. The parties account for the transaction as a *secured borrowing* with a pledge of noncash collateral. Accordingly, **the receivables are still on the seller's books** and it must recognize a liability for the amount of cash received.

If the receivables are factored with recourse, the entries will include a credit to a liability account titled **recourse liability** and the loss on the sale of the receivables will be greater by the amount of the recourse liability.

If accounts receivable are transferred to a factor **with recourse**, two treatments are possible. The transfer may be considered either a sale or a borrowing (with the receivables as mere collateral).

a. Generally, a sale exists whenever surrender of control occurs. In order to be considered a **sale**, the transfer must meet the following conditions:

- (1) The transferor's (seller's) obligation for uncollectible accounts can reasonably be estimated. ***Post some security – due from***
- (2) The asset should be outside the reach of the seller and its creditors. The transferor *surrenders control* of the future economic benefits of the receivables to the buyer. The buyer should be able to sell the assets or use them as collateral
- (3) The transferor *cannot be required to repurchase* the receivables, but may be required to replace the receivables with other similar receivables.

b. If any of the above conditions are not met, the transfer is treated as a loan.

**Footnote****Accounts Receivable Disclosure Requirements**

Material receivables must be kept separate by type on the balance sheet and reported net of any valuation accounts. Receivables in the current assets section are expected to be converted to cash within the longer of a year or the operating cycle. Required disclosures include loss contingencies related to receivables, any pledges of receivables as collateral, any material concentrations of credit risk, and any related party receivables.

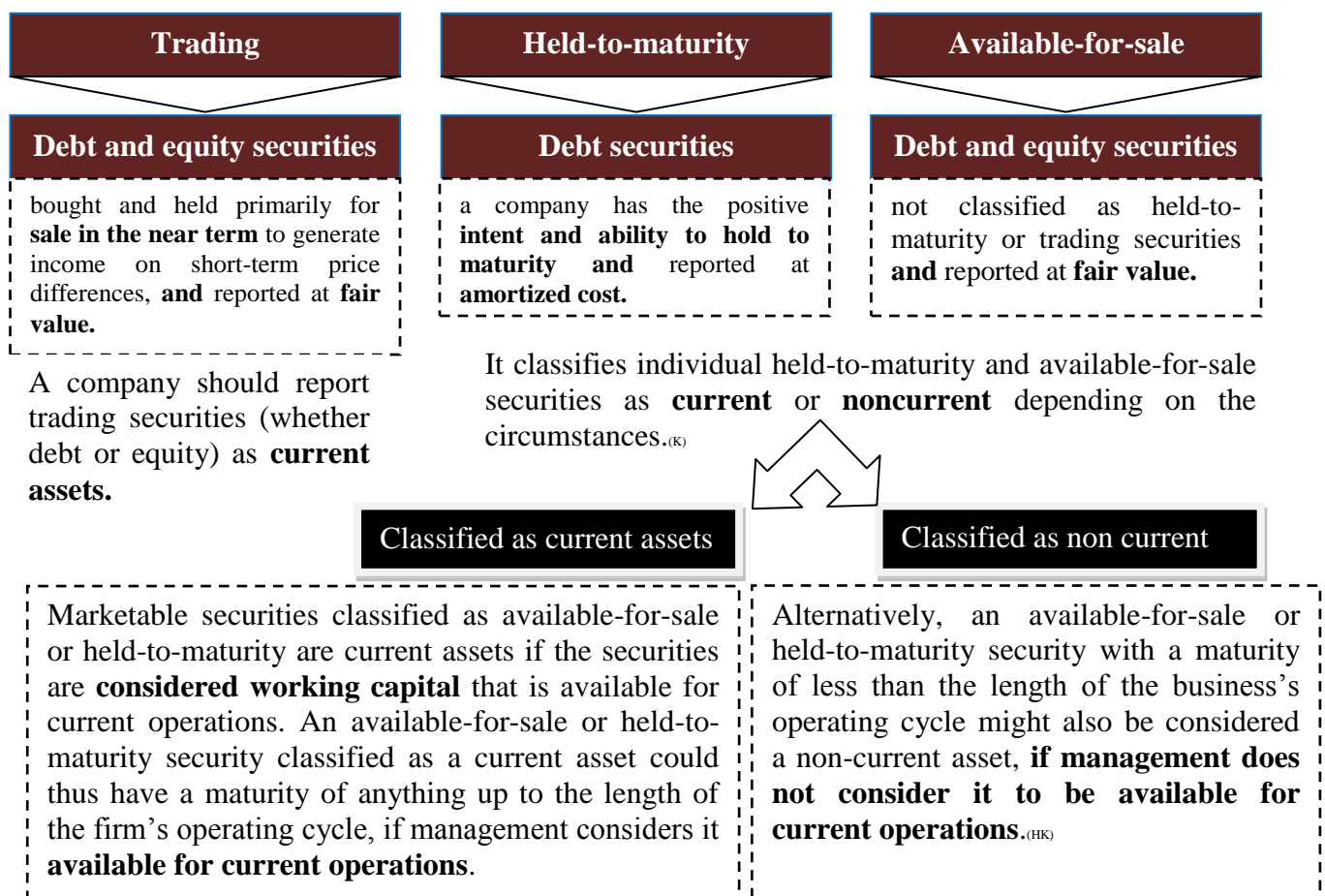
**INVESTMENTS IN MARKETABLE DEBT AND EQUITY SECURITIES**

Companies group investments in debt and equity securities into three separate portfolios for valuation and reporting purposes.

A **debt** security represents a creditor relationship with the issuer. The investment in debt securities can be classified either as (a) held to maturity, (b) trading, or (c) available-for-sale. A fourth possibility is to elect the fair value option (FVO).

An **equity** security, such as a share of common stock, is an ownership interest in an entity or a right to acquire or dispose of such an interest. The accounting method used by the investor for its investment in equity securities depends on its presumed influence based on the ownership interest held.

- When the investor has little or no influence over the investee (holds less than 20% of voting interests), the investment in equity securities may be classified as either (a) trading or (b) available-for-sale. A third possibility is to elect the FVO.
- When the investor has significant influence over the investee (holds between 20% and 50% of voting interests), the investment in equity securities can be accounted for using either (a) the fair value option (FVO) or (b) the equity method.
- Consolidation is required when the investor owns more than 50% of the outstanding voting interests





## B. Classification

Securities should be classified into one of three categories, based on the intent of the company.

### 1. Trading Securities = **Current assets**

Trading securities are those securities (both debt and equity) that are bought and held principally for the purpose of selling them in the near term. Trading securities generally reflect active and frequent buying and selling with the objective of generating profits on short-term differences in price. Securities classified as trading securities are generally reported as current assets, although they can be reported as noncurrent, if appropriate.

### 2. Available-for-Sale Securities = **Noncurrent (GR) assets**

Available-for-sale securities are those securities (both debt and equity) not meeting the definitions of the other two classifications (trading or held-to-maturity). Securities classified as available-for-sale securities are reported as either current assets or noncurrent assets, depending on the intent of the corporation. If the security represents cash available for current operations, it is appropriate to report the security as a current asset.

### 3. Held-to-Maturity Securities (*debt securities only*) = **Noncurrent (GR) assets**

Investments in debt securities are classified as held-to-maturity securities only if the corporation has the positive intent and ability to hold these securities to maturity. If the intent is to hold the security for an indefinite period of time, but not necessarily to maturity, then the security would be classified as available-for-sale. Securities classified as held-to-maturity are reported as current or noncurrent assets, based on their time to maturity.

## U.S. GAAP VS. IFRS

Under IFRS, marketable security investments can be classified as follows:

- Financial assets at fair value through profit or loss,
- Available-for-sale, or
- Held-to-maturity

A financial asset at fair value through profit or loss is a financial asset that meets either of the following conditions:

1. It is classified as held for trading (equivalent to trading securities under U.S. GAAP).
2. The asset is designated as an investment at fair value through profit or loss using the fair value option.





## II. VALUATION

### A. Trading and Available-for-Sale Securities

**Fair value = Mark to market**

Trading and available-for-sale securities must be reported at fair value. Fair value is the market price of the security or what a willing buyer and seller would pay and accept to exchange the security. Changes in the fair value of trading and available-for-sale securities result in unrealized holdings gains or losses. The reporting of these gains or losses in the financial statements depends on the classification of the securities. Note that although two general ledger accounts are normally maintained (i.e., one for the original cost of the security and the other for the valuation account), the presentation on the balance sheet is one net amount.

#### 1. Trading Securities - Fair Value Through Earnings

a. Trading securities are bought and held primarily for sale in the near term. They are purchased and sold frequently. Typical trading securities are Treasury bills, commercial paper, money market and euro deposits, and short-term certificates of deposit (CDs) purchased with excess short-term cash.

##### Initial recording

- Each trading security is initially recorded at cost.

At each balance sheet date, trading securities are remeasured at fair value.

##### In the balance sheet

- trading securities are reported at fair value.

##### In the income statement

##### Unrealized Gains and Losses- Trading Securities

①IDEA

Unrealized holding gains and losses on trading securities are included in earnings. The gains and losses result from changes in fair value (*when marking to market*). In the income statement, **unrealized and realized** holding gains and losses, dividends, and interest income are included in earnings.

*Journal entry to record loss on the Income Statement:*

Unrealized loss on trading securities	\$XXX	
Valuation account (fair value adjustment)		\$XXX



### EXAMPLE

On October 1, Year 1, Maverick Go., purchased 5,000 shares of Larson Co: common stock for their fair value. Maverick classified this investment as **trading** securities. On March 1, Year 2, Maverick sold all of its investment in Larson for its fair value on that day. The following are the fair values per share of Larson common stock:

Date:	Fair Value
October 1, Year 1	\$15
December 31, Year 1	13
March 1, Year 2	20

#### October 1. Year 1

Trading securities (5,000 x \$15)	\$75,000
Cash	\$75,000

December 31 Year 1 - At each balance sheet date trading securities are remeasured at fair value. Unrealized holding gains and losses are reported in earnings.

Unrealized holding loss [5,000 x (\$15 - \$13)]	\$10,000
Trading securities fair value adjustment	\$10,000

In Maverick's December 31 Year 1 balance sheet, the investment in Larson is reported in the current assets section as trading securities. It is measured at year-end fair value of \$65,000 (5,000 x \$13).

#### March 1. Year 2

Cash (5,000 x \$20)	\$100,000
Trading securities (\$75,000 - \$10,000)	\$65,000
Gain on disposal of trading securities	35,000

The accounting for fair value option (FVO) is the same as for trading securities, except the fair value option may be elected even if the securities were not purchased to be sold in the near term.



**2. Available-for-Sale Securities - Fair Value Through OCI**

Unrealized holding gains and losses on available-for-sale securities (including those classified as current assets) are reported in **other comprehensive income**.

**Initial recording**

- Each available-for-sale security is initially recorded at cost.

**Underlying Concepts**

Recognizing unrealized gains and losses is an application of the concept of comprehensive income.

**At each balance sheet date, available-for-sale securities are remeasured at fair value.**

**In the balance sheet**

- Available-for-sale securities are reported at fair value.

**Unrealized Gains and Losses-Available-for-Sale Securities**

- Unrealized holding gains and losses (net of taxes) resulting from remeasurement to fair value (*when marking to market*) are reported in **other comprehensive income (OCI)**, (a separate component of stockholder's equity, until realized).

*Journal entry to record unrealized loss reported in other comprehensive income:*

OCI  
PUFE

Unrealized loss on available-for-sale securities	\$XXX	
Valuation account (fair value adjustment)		\$XXX

The statement of comprehensive income reports unrealized holding gains and losses for the period that are included in comprehensive income.

**In the income statement      Only when realized**

- Realized gains and losses, dividends, and interest income are included in earnings.
- When a security classified as available-for-sale is sold, the related unrealized gains and losses that were previously recognized in OCI must be reclassified to the income statement by debiting OCI and crediting a gain.

**U.S. GAAP VS. IFRS**

Under IFRS, unrealized gains and losses on available-for-sale securities are reported in other comprehensive income, except for **foreign exchange gains and losses** on available-for-sale debt securities, which are reported directly on the income statement. Foreign exchange gains and losses on available-for-sale equity securities are included in other comprehensive income.

**3. Realized Gains and Losses**

Realized gains or losses are recognized when a security is **sold** and when an available for-sale security is deemed to be **impaired**. All realized gains or losses are recognized on the income statement.

**NOTE:** If a decline in fair value of an individual held-to-maturity or available-for-sale security below its amortized cost basis is **permanent**, the amortized cost basis is written down to fair value as a new cost basis. The impairment is a realized loss included in earnings.



### EXAMPLE

On April 1, Year 1, Maverick Co. purchased 1,000 shares of White Co. common stock for their fair value. Maverick, classified this investment as **available-for-sale securities**. On May 1, Year 3, Maverick sold all of its investment in White for its fair value on that day. The following are the fair values per share of White common stock:

Date:	Fair Value
April 1, Year 1	\$25
December 31, Year 1	32
December 31, Year 2	27
May 1, Year 3	31

#### April 1, Year 1 Journal Entry

Available-for-sale securities (1,000 x \$25)	\$25,000	
Cash		\$25,000

December 31, Year 1 Journal Entry- At each balance sheet date, available-for-sale securities are remeasured at fair value. Unrealized holding gains and losses are included in OCI.

Available-for-sale securities fair value adjustment [1,000 x (\$32 - \$25)]	\$7,000	
Unrealized holding gain (OCI item)		\$7,000

#### Presentation in Maverick's December 31, Year 1 financial statements:

Balance sheet: Assets section - Available-for-sale securities (1,000 x \$32)	\$32,000
Equity section - Accumulated OCI	7,000
Statement of comprehensive income - Unrealized holding gain (OCI)	7,000

#### December 31, Year 2 Journal Entry

Unrealized holding loss [1,000 x (\$27-\$32)]	\$5,000	
Available-for-sale securities fair value adjustment		\$5,000

#### Presentation in Maverick's December 31, Year 2 financial statements

Balance sheet: Assets section - Available-for-sale securities (1,000 x \$27)	\$27,000
Equity section - Accumulated OCI (\$7,000 - \$5,000)	2,000
Statement of comprehensive income - Unrealized holding loss (OCI)	5,000

#### May 1, Year 3 Journal Entry

Cash (1,000 x \$31)	\$31,000	
Accumulated OCI	2,000	
Available-for-sale securities		\$27,000
Realized gain on disposal of available-for-sale securities		6,000

**B. Held-to-Maturity Securities- Amortized Cost** (*not fair value*)

An investment in a **debt**<sup>1</sup> security is classified as held-to-maturity when the holder has both the positive intent and the ability<sup>2</sup> to hold the security until its maturity date.

**No re measurement to fair value**

**Held-to-maturity securities are reported at amortized cost.**

- Amortized *historical* cost is the acquisition cost adjusted for the amortization of discount or premium, if appropriate.

**Presentation - balance sheet.**

Held-to-maturity securities are presented at carrying value.

- net of any unamortized premium or discount.

Amortization of any discount or premium is reported by a debit (credit) to held-to-maturity securities and a credit (debit) to interest income.

No re measurement to fair value at the end of the reporting period is required. No valuation account is used.

**Presentation - income statement.**

Realized gains and losses and interest income (including amortization of premium or discount) are included in earnings.

**Unrealized gains and losses on held-to-maturity** securities are **not recognized** on either the income statement or the balance sheet because the assets are not recorded at fair value.

A typical held-to-maturity security would be a **corporate bond**.

**Balance Sheet**

Current assets

Interest receivable \$ 4,000

Long-term investments

Debt investments (held-to-maturity) \$93,537

**Income Statement**

Other revenues and gains

Interest revenue \$ 9,259

<sup>1</sup> Because equity securities have no maturity date, **only debt** securities can be held to maturity.

<sup>2</sup> (financial flexibility, risk tolerance).



Classification	Balance Sheet	Reported	Unrealized Gain/Loss	Cash Flow
Trading	Current or Noncurrent	Fair Value	Income Statement	Operating or Investing*
Available-for-Sale Securities	Current or Noncurrent	Fair Value	Other Comprehensive Income (PUFER)	Investing
Held-to-Maturity Debt Securities	Current or Noncurrent	Amortized Cost	NONE	Investing

\*Under U.S. GAAP, trading security transactions are classified in operating cash flows or investing cash flows based on the nature and purpose for which the securities were acquired. If trading securities are classified as noncurrent on the balance sheet, then trading security transactions will be reported as investing cash flows. If trading securities are classified as current on the balance sheet, then trading security transactions will be reported as operating cash flows.

Note: GAAP = Income/loss  
Tax return = Not taxable (until sold)  
= Deferred taxes

#### IV. SALE OF SECURITY = (I/S)

A sale of a security from any category results in a realized gain or loss and is reported on the income statement for the period. The valuation account, if used, would also have to be removed on the sale of a security. For trading securities, the realized gain or loss reported when the security is sold is the difference between the adjusted cost (original cost +/- unrealized gains/losses previously recognized on the income statement) and the selling price. For available-for-sale securities, the realized gain or loss reported when the security is sold is the difference between the selling price and the original cost of the security. Any unrealized gains or losses in accumulated other comprehensive income must be reversed at the time the security is sold.

##### Trading securities:

Cash	\$XXX	
Trading security		\$XXX
Realized gain on trading security (IDEA)		\$XXX

##### Available-for-sale securities:

Cash		\$XXX	
Unrealized gain on available-for-sale security (PUFE)	XXX	←	<b>Out of AOCI/PUFE</b>
Available-for-sale security		XXX	
Realized gain on available-for-sale security (IDEA)	XXX	←	<b>Into income statement</b>



## V. INCOME TAX EFFECTS = When sold (when marked to market)

Tax effects of unrealized gains or losses entering into the determination of net income must be reflected in the computation of deferred income taxes, because unrealized gains and losses are not deductible for tax purposes.

## VI. REQUIRED DISCLOSURES

The following information concerning securities classified as available-for-sale and separately for held-to-maturity securities must be disclosed in the financial statements or appropriate notes thereto:

- Aggregate fair value,
- Gross unrealized holding gains and losses,
- Amortized cost basis by major security type, and
- Information about the contractual maturities of debt securities.

### COMPREHENSIVE EXAMPLE — MARKETABLE SECURITIES

The following information pertains to Fox, Inc.'s portfolio of marketable investments for the year ended December 31, Year 2:

	<u>Cost</u>	<u>Fair value at 12/31/Y1</u>	<u>Year 2 activity</u>		<u>Fair value at 12/31/Y2</u>
			<u>Purchases</u>	<u>Sales</u>	
<u>Held-to-maturity securities</u>					
Security ABC			\$100,000		<del>\$95,000</del>
<u>Trading securities</u>					
Security DEF	\$150,000	\$160,000			155,000
<u>Available-for-sale securities</u>					
Security GHI	190,000	165,000		\$175,000	- 0 -
Security JKL	170,000	175,000			160,000

Security ABC was purchased at par. All declines in fair value are considered to be temporary.

#### Required:

1. Calculate the carrying amount of each security on the balance sheet at December 31, Year 2.
2. Calculate any realized gain or loss on the Year 2 income statement.
3. Calculate any unrealized gain or loss on the Year 2 income statement.
4. Calculate any unrealized gain or loss to be reported at December 31, Year 2 as other comprehensive income



## SOLUTION

1. Carrying amount of each security at December 31, Year 2:

Security ABC \$100,000 NBV

At year end, held-to-maturity investments are reported at their carrying value (amortized cost), not fair value. Carrying value of security ABC is the purchase price of \$100,000.

Security DEF \$155,000 FV

The year-end carrying amount of trading investments is the fair value at year end. Fair value of security DEF is \$155,000.

Security GHI was sold - 0 - Sold

Security JKL \$160,000 FV

The year-end carrying amount of available-for-sale investments is the fair value at year end. Fair value of security JKL is \$160,000.

2. Realized gain or loss on income statement: (Sold)

Security GHI (\$15,000)

The \$175,000 sales proceeds less the \$190,000 cost yields a realized loss of \$15,000. The sale of security GHI will be recorded with the following JE:

DR	Cash	\$175,000	
DR	Realized loss	15,000 = I/S	
CR	Security GHI		\$165,000
CR	Unrealized loss (OCI)	25,000 = out of OCI	

## SOLUTION (continued)

3. Unrealized gain or loss on income statement: (Trading)

Security DEF (\$5,000)

Only adjustments to trading securities valuations are reported on the income statement. The \$160,000 carrying value of the trading securities must be reduced to the \$155,000 fair value and an income statement unrealized loss of \$5,000 is recognized.

4. Unrealized gain or loss (current year change)—other comprehensive income: (AFS)

Security GHI & JKL (net) \$10,000

	12/31/Y1 Accumulated OCI <u>Gain&lt;Loss&gt;</u>	Year 2 OCI <u>Gain&lt;Loss&gt;</u>	12/31/Y2 Accumulated OCI <u>Gain&lt;Loss&gt;</u>
Security GHI	<\$25,000> <sup>1</sup>	\$25,000	-0-
Security JKL	<u>5,000</u> <sup>2</sup>	<u>&lt;15,000&gt;</u>	<u>&lt;10,000&gt;</u>
	<\$20,000>	\$10,000	<\$10,000>

1 - Security GHI - Loss in 12/31/Y1 AOCI = \$165,000 fair value - \$190,000 cost = <\$25,000>

2 - Security JKL - Gain in 12/31/Y1 AOCI = \$175,000 fair value - \$170,000 cost = \$5,000

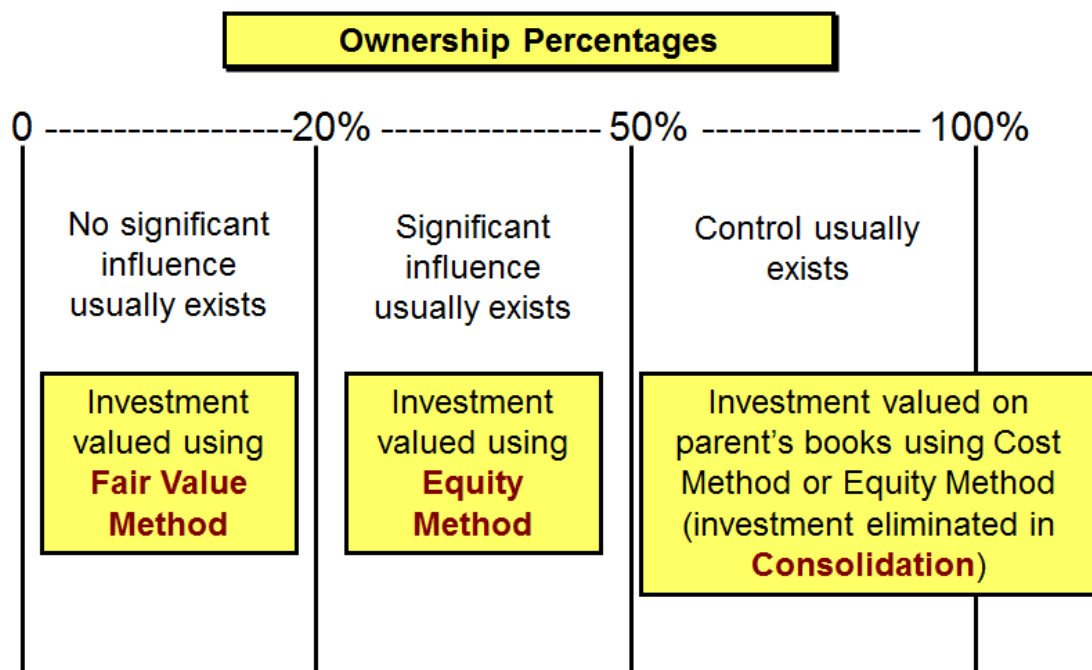




## Investments in Equity Securities

An **equity** security, such as a share of common stock, is an ownership interest in an entity or a right to acquire or dispose of such an interest. The accounting method used by the investor for its investment in equity securities depends on its presumed influence based on the ownership interest held.

- When the investor has **little or no influence** over the investee (holds less than 20% of voting interests), the investment in equity securities may be classified as either (a) trading or (b) available-for-sale. A third possibility is to elect the FVO.
- When the investor has **significant influence** over the investee (holds between 20% and 50% of voting interests), the investment in equity securities can be accounted for using either (a) the fair value option (FVO) or (b) the equity method.
- Consolidation is required when the investor owns more than 50% of the outstanding voting interests



### Accounting and Reporting for Equity Securities by Category

Category	Valuation	Unrealized Holding Gains or Losses	Other Income Effects
<b>Holdings less than 20%</b>			
1. Available-for-sale	Fair value	Recognized in "Other comprehensive income" and as separate component of stockholders' equity	Dividends declared; gains and losses from sale.
2. Trading	Fair value	Recognized in net income	Dividends declared; gains and losses from sale.
<b>Holdings between 20% and 50%</b>	Equity	Not recognized	Proportionate share of investee's net income.
<b>Holdings more than 50%</b>	Consolidation	Not recognized	Not applicable.



**Equity Method/Do Not Consolidate = Significant Influence but 50% or Less Ownership (typically 20%-50%)**

An investment (direct or indirect) of 20 percent or more of the voting stock of an investee should lead to a presumption that in the absence of evidence to the contrary, an investor has the ability to exercise **significant influence** over an investee. In instances of “significant influence,” the investor must account for the investment using the **equity** method.

### Equity Method

Record the investment at cost and subsequently adjust the amount each period for

- ◆ the investor's proportionate share of the earnings (losses) and
- ◆ dividends received by the investor.

If investor's share of investee's losses exceeds the carrying amount of the investment, the investor ordinarily should discontinue applying the equity method and not recognize additional losses.

Under the equity method the investment is originally recorded at the price paid to acquire the investment.

The investment account is subsequently adjusted as the net assets of the investee change through the earning of income and payment of dividends.

- The investment account increases by the investor's share of the investee's net income with a corresponding credit to the investor's income statement account, Equity in Subsidiary/Investee Income.

- The distribution of dividends by the investee reduces the investment balance. Continuing losses by an investee may result in a decrease of the investment account to a zero balance.



**B. Balance Sheet-***"Investment in Investee" using Equity**Journal entry to record at cost (FV of consideration plus legal fees):*

Investment in investee	\$XXX
Cash	\$XXX

Under the equity method, the investor recognizes in income its share of the investee's earnings or losses in the periods for which they are reported by the investee. The journal entries are

Under the equity method, the investor recognizes in income its share of the investee's earnings or losses in the periods for which they are reported by the investee. The journal entries are

<u>Investee reported net income for the period</u>	<u>investee reported net loss for the period</u>
Investment in X Co. \$XXX	Loss - Share of X Co. losses \$XXX
Revenue -- Share of X Co. earnings      \$XXX	Investment in X Co.      \$XXX

- An investor recognizes increases in earnings and the investment account for its share of the investee's net income for the period.
- An investor recognizes a loss and a decrease in the investment account for its share of the investee's net loss for the period.
- The investor's share of the investee's earnings or losses is recognized only for the portion of the year that the investment was held under the equity method.

Dividends from the investee are treated as a return of an investment. They have no effect on the investor's income.

The investor's share of dividends distributed by the investee increases cash and reduces the investment.

The journal entry is

Cash or dividend receivable	\$XXX
Investment in X Co.	\$XXX

If an investor can no longer be presumed to exercise significant influence (for example, due to a decrease in the level of ownership), it ceases to account for the investment using the equity method.

Journal entry to record increase by the investor's/parent's ownership percentage of earnings of investee

Investment in investee	\$XXX
Equity in earnings/investee income	\$XXX

Journal entry to record decrease by the investor's/parent's ownership percentage of cash dividends from investee (*stock dividends reduce unit cost of stock owned in investee*):

Cash	\$XXX
Investment in investee	\$XXX

**C. Income Statement-***Record the investor's/parent's ownership percentage of earnings as income (dividends are not income, treat as bank withdrawals).*

Journal entry to record investee earnings (investor's/parent's percentage ownership of earnings of investee):

Investment in investee	\$XXX
Equity in earnings/investee income	\$XXX



Sec.A.  
15%

## Gleim U 3.3 INTANGIBLE ASSETS



### A.Introduction

#### Intangible assets that are not recorded in the books

The value of intangible assets continues to increase in today's economy. Many companies have valuable "intangible assets," such as their human resources, intellectual capital (employees), quality of management and customer loyalty, but these resources are not reported on the balance sheet because of the difficulty in reliably measuring their value.

#### Intangible assets that are recorded in the books

The balance sheet includes the value of purchased intangible assets, which are measured at amortized cost. This section covers the characteristics of intangibles and then explores valuation, amortization, impairment testing, and accounting for goodwill and research and development.



### B. Intangible Assets-Overview, Valuation, and Characteristics

Intangible assets are long-lived legal rights and competitive advantages developed or acquired by a business enterprise, to be used in business operations and to provide benefits over several accounting periods. (Becker)

Intangible assets have two main characteristics:

1. **They lack physical existence.** Intangible assets derive their value from the rights and privileges granted to the company using them, (i.e., intangible asset is an identifiable, nonmonetary/nonfinancial asset that lacks physical substance).
2. **They are not financial instruments.** Assets such as bank deposits, accounts receivable, and long-term investments in bonds and stocks also lack physical substance. However, financial instruments derive their value from the right (claim) to receive cash or cash equivalents in the future. Financial instruments are not classified as intangibles.

Some issues for intangibles are treated in approximately the same way like PPE:

- Initial recording of the item.
- Amortization of the cost of the item (amortization is the equivalent to depreciation of tangible assets).
- Adjusting the value of the asset to recognize any permanent decreases in its value.

Intangible assets	
Goodwill	\$3,374
Trademarks	1,320
Other identifiable intangibles	147
Total intangibles	\$4,841



**Other factors distinguish intangible assets from tangible assets:**

- Their values may fluctuate due to competitive conditions.
- They may be valuable only to the company possessing them.
- Their future benefits may not be readily determinable.
- They may have indeterminate lives.
- Intangible assets typically are classified as **noncurrent** assets.

**Classification of Intangible Assets**

Intangible assets differ considerably in their characteristics, useful lives, and relationship to operations of an enterprise and are classified accordingly.

**a. Identifiability**

Intangible assets may be either:

- specifically identifiable (e.g., patents, copyrights, franchise, etc.) or
- Not specifically identifiable (e.g., goodwill).

**b. Manner of Acquisition**

**(1) Purchased Intangible Assets**

Intangible assets (other than goodwill) acquired from other enterprises or individuals should be recorded as an asset at acquisition cost plus any additional costs, such as legal and registration fees.

**(2) Internally Developed Intangible Assets**

- a. Internally developed intangible assets (other than goodwill) are recorded initially at the amount of the additional costs other than those for R&D (e.g., legal fees).
- b. R&D costs must be **expensed** as incurred and are thus never capitalized.

**c. Expected Period of Benefit**

Is the economic life can be determined or is indeterminable?

A company may have three categories of intangible assets:

1. Intangible assets with finite (Limited) useful lives (an amortized intangible asset),
2. Intangible assets with indefinite lives (a nonamortized intangible asset),
3. goodwill

**d. Separability**

Is the asset can be separated from the entity (e.g., a patent) or is substantially inseparable from it (e.g., a trade name or goodwill)?

**Example**

A company invested \$200,000 and \$300,000 in the research phase and the development phase, respectively, of an internally developed patent. In addition, the company paid \$10,000 and \$15,000 for patent registration fees and legal fees, respectively.

The patent will be recorded at the amount of the incidental costs of \$25,000 (\$10,000 patent registration fees + \$15,000 legal fees). The amounts paid for research and development must be expensed as incurred and are never capitalized to the cost of the asset.

**IFRS Difference**

Intangible assets may be accounted for under either the cost model (as under U.S. GAAP) or the revaluation model (described in Subunit 3.1). The revaluation model can be applied only if the intangible asset is traded in an active market.

**IFRS Difference**

**Research** costs must be **expensed** as incurred.

**Development** costs may result in **recognition of an intangible asset** if the entity can demonstrate the (1) technical feasibility of completion of the asset, (2) intent to complete, (3) ability to use or sell the asset, (4) way in which it will generate probable future economic benefits, (5) availability of resources to complete and use or sell the asset, and (6) ability to measure reliably expenditures attributable to the asset.

Using the data from the previous example, assume that all the criteria mentioned above were met. Under IFRS, the patent will be recorded at the amount of \$325,000 (\$300,000 development costs + \$25,000 incidental costs). The research costs of \$200,000 are expensed as incurred and are never capitalized to the cost of the asset.

**C.Valuation & Classification of Intangibles**

Intangibles are recorded differently depending on whether they were purchased or created internally.

**1. Purchased Identifiable Intangibles (externally acquired).** A company may purchase an intangible asset, such as a patent, from another company. The acquisition of a purchased intangible involves no special issues. It is accounted for in the same way as we discussed the acquisition of a single asset.

**Recording Purchased Intangibles:**

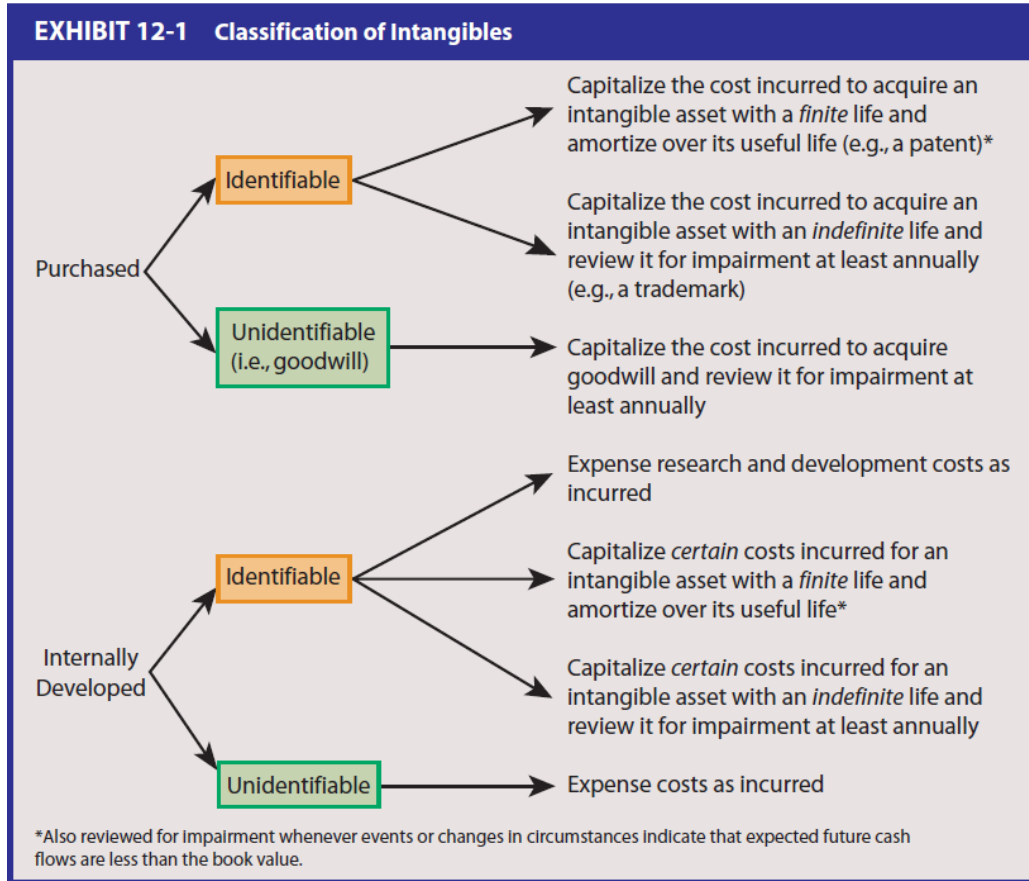
- Purchased intangibles are recorded at cost, plus any additional costs, such as legal fees.
- If intangibles are acquired in exchange for stock or noncash assets, the exchange is recorded at the more reliable of the fair value of consideration given or the intangible assets received.
- If tangible assets are part of basket purchase, the lump-sum price is allocated between the assets received based upon relative fair values.

**2. Purchased Unidentifiable Intangibles.** A company *capitalizes* the cost of a purchased unidentifiable intangible asset. Goodwill is the major unidentifiable intangible. Goodwill can be acquired only through the *purchase of another* company or segment of a company.

**3. Internally Developed Identifiable Intangibles.** When a company internally develops an intangible asset, such as a patent, it can *capitalize only* certain costs. The costs of a patent include the legal and related costs of establishing the rights associated with a patent but not the costs of developing the product or process that is being patented. A company includes those latter costs in R&D costs and *must expense* them as incurred. *Thus, the expensing of R&D costs is an exception to the general rule of capitalization of internally developed identifiable intangibles.*



**4. Internally Developed Unidentifiable Intangibles.** A company expenses the costs of internally developed unidentifiable intangibles as incurred, even though they may be expected to have benefits extending beyond the current period. Examples of these costs include employee training and design of quality products. This procedure is justified because either the costs incurred or the expected life of the benefits is difficult to measure reliably.



### D.Rule of Amortization

#### Amortization and Non-Amortization of Various Kinds of Intangibles

- If an intangible asset has a **finite life** (a limited life), **it is amortized**.
- If it has an **indefinite life**, it is **not amortized** but is tested regularly for impairment & written down to its fair value if it is found to be impaired.

Type of Intangible	Manner Acquired		Amortization	Impairment Test
	Purchased	Internally Created		
Limited-life intangibles	Capitalize	Expense*	Over useful life	Recoverability test and then fair value test
Indefinite-life intangibles	Capitalize	Expense*	Do not amortize	Fair value test only

\*Except for direct costs, such as legal costs.



## **Limited-Life Intangibles also called finite useful lives (a nonamortized intangible asset)**

### **Accounting treatment and balance sheet presentation:**

#### **Period of amortization**

The cost of intangible assets with a limited life is amortized over the period of expected benefit useful lives.

#### **Identification of the Amortizable Amount**

The amortizable amount equals the amount of cost initially assigned minus the residual value.

$$\text{Amortizable amount} = \text{Historical (initial) cost} - \text{Residual Value}$$

- When an intangible asset has a limited life, the capitalized cost minus any residual (salvage) value is amortized over that life.
- Residual value is usually zero unless the entity believes that the intangible will have some value to another entity at the end of the amortization period (such as a purchase commitment for a mailing list).

#### **Method of amortization**

Intangible assets are amortized using the straight-line method unless another method more clearly reflects the pattern of asset use.

Amortization is debited to an expense account and credited either:

- to the intangible asset account or
 

Amortization expense	\$XXX	
Intangible asset		\$XXX
- Or to a separate accumulated amortization account.
  - The accumulated amortization of these intangibles is disclosed in the notes to the financial statements.

#### **Balance Sheet Presentation**

The carrying amount on the balance sheet of an intangible asset with a finite useful life equals its historical cost minus accumulated amortization and any impairment losses.

#### **Factors used to determine the intangible's useful life**

- Expected use of the intangible
- Limits placed on an intangible's life through legal, regulatory, or contractual provisions
- Extension rights or other provisions for renewal
- Provisions that allow for renewal or extension of the asset's life without substantial cost
- Effects of technological change, obsolescence, consumer demand, competition, and other economic factors
- Expected useful life of another asset related to the intangible asset
- Levels of maintenance expenditures required to gain the expected future benefits from the asset (if these are material compared to the carrying value of the asset, it suggests a limited life.)

**Intangible assets with indefinite (unlimited) useful lives (is not amortized)****Balance Sheet Presentation**

Are **not amortized**, but are reviewed for impairment annually. The carrying amount of an intangible asset with an indefinite useful life equals its historical cost minus any impairment losses. They are reported on the balance sheet at their **historical cost or, if impaired, at their lower fair value**. Goodwill is an intangible asset with an indefinite useful life. However, the accounting treatment of goodwill differs from that for other intangible assets.

**E.Types of Intangibles**

1. Marketing intangibles :Trademarks ® & trade names
2. Customer intangibles: Customer lists
3. Artistic intangibles: Copyrights ©
4. Contract intangibles: Franchises and licensing agreements
5. Technological intangibles: Patented technology
6. Goodwill

**1.Marketing intangibles.**

Any assets used to market or promote a business:

- Trademarks ®, trade names,
  - Trademarks can be registered for 20 years and renewed for longer time periods.
  - The trademark should be amortized over its useful life, but the amortization period should not exceed 40 years.
- company names,
- Internet domain names, and
- Agreements not to compete.
- They include words or symbols that identify products, services, or companies.

**Purchased marketing intangibles** are **capitalized** at their purchase price.

**Internally developed marketing intangibles** are **capitalized** for the amount of legal fees, registration fees, design and consulting fees, costs related to securing it, such as attorney fees, registration fees, design costs, consulting fees, and successful legal defense costs and other costs, **excluding** R&D.

When the total cost of a trademark or trade name is insignificant, a company simply expenses it. Most marketing intangibles have indefinite lives; therefore, their cost cannot be amortized

**Indefinite number of renewals = do not amortize**

The U.S. Patent and Trademark Office grants **indefinite** numbers of **ten-year** renewals for registered marks, but common law protects even unregistered marks. Therefore a company that uses an established trademark or trade name may properly considers it to have an indefinite life and **do not amortize** its cost.





## 2.Customer intangibles (Assets relate to dealings with third parties).

- Customer lists,
- order or production backlogs, and
- other customer contracts and relationships

Most customer intangibles have a **finite** life and are **amortized over that period**.

## 3.Artistic intangibles.

Copyrights © on books, movies, plays, poems, music, photos, and audiovisual information.

A copyright is granted for intellectual property consisting of original works and is effective for the life of the author plus 70 years and **cannot be renewed**. Copyrights can be sold.

### Purchased Copyrights

- As with patents, if a copyright is purchased, it is recorded at its purchase price. **The costs to purchase and defend a copyright** would be amortized over the period of expected benefit (which may be shorter than the legal life of the copyright).
  - Capitalized costs for copyrights are amortized over the useful life of the copyright if less than its legal life (the life of the creator plus 70 years).
- Any **R&D costs** that lead to a copyright must be **expensed** as they are incurred and thus are not capitalized or amortized.
- Because it is difficult to assess the useful life of a copyright, companies usually write off amounts capitalized for copyrights over a fairly short period of time.

### Internally generated copyright

- An internally generated copyright can be recorded at its registration costs only.

## 4.Contract intangibles

Rights granted by contract arrangements:

- construction permits,
- broadcast rights,
- franchises and licensing agreements,
- service contracts.

**Franchises** are contractual agreements that allow a franchisee to operate a specific business using the name of the franchisor. The franchisee should **capitalize** the costs of acquiring the franchise and **amortize them over the useful life** of the franchise. A franchise with an **indefinite life** should be carried at cost and **should not be amortized** but should be tested at least annually for impairment.

The initial costs of securing a franchise (such as legal fees or an advance payment) are recorded in an intangible asset account and amortized over the life of the franchise, if it is limited. However, annual payments required under a franchise agreement are expensed as incurred.

**Note:** The franchisor (the seller of the franchise) should recognize franchise fees as revenue after having performed substantially all required services. If the fees will be received in the long term, the amount should be reported at their present value. This is covered again in the section on Revenue Recognition.





## 5. Technological intangibles.

- Patented technology,
- Trade secrets,
- Other innovations

### Patent

- A patent is the right of exclusive use granted by the U.S. Patent Office.
- Previously patents were valid for 17 years, but the length of time is now 20 years for all new patents.
- Patents, which include both product and process patents, have a legal life of 20 years.

### Amortization Period

- Patents are amortized over the **shorter of the patent's legal life or the economic useful life** of the patent.
  - It is very possible that the economic useful life of the patent will be shorter than the legal life of the patent because of changing technologies.
  - The useful life may be substantially shorter than the legal life because of changes in consumer tastes, delays in marketing the product or service, and development of substitutes or improvements.

### Purchased patents

Purchased patents are **capitalized** at the purchase price; any legal fees required to secure or defend the patent are also capitalized.

However, research and development (R&D) costs related to the patented product or process must be **expensed** as incurred. The capitalized cost of a patent is amortized over the *shorter of* its legal life or its useful life.

### Internally developed patents

- The capitalized and amortized amount is generally limited to registration fees and legal fees for filing the patent.
  - This accounting treatment is related to the accounting treatment for research and development. Research and development costs are generally expensed as incurred and thus they cannot be capitalized and amortized.

### Accounting treatment of the costs of the legal defense of a patent

#### Successful litigation are capitalized

- If a company successfully defends a patent in court, the cost of the legal defense is added to the intangible asset account and is amortized over the remaining useful life of the patent.
- The costs of successful litigation are **capitalized** to the cost of the patent because they will benefit future periods. They are amortized over the shorter of (a) the remaining legal life or (b) the estimated useful life of the patent.

**Unsuccessful litigation**

- An unsuccessful suit also may indicate that the **unamortized cost** of the patent has no value, or lower value, and **impairment** loss might be recognized.
- However, if the company is unsuccessful in its defense of the patent, the remaining **book value** of the patent as well as the **legal costs** of the defense must be **expensed** immediately because the court ruling has essentially stated that the company has no patent or patent rights.

**6. Goodwill**

Goodwill is the difference between the price paid to acquire a business and the fair market value of its underlying identifiable assets. The amount paid for a company is allocated first to its identifiable tangible and intangible assets, and the remainder is recorded as goodwill, which is discussed more thoroughly later.

**F. Accounting for Impairment of Intangible Assets****Impairment Testing for Limited/finite-Life intangibles (two step impairment test)**

The impairment test for an intangible asset with a finite useful life (an amortized intangible asset) is the *two-step impairment* test for long-lived assets.

- **Step 1**—The carrying amount of the asset is compared to the sum of the undiscounted cash flows expected to result from the use of the asset and its eventual disposition.
- **Step 2**—If the carrying amount exceeds the total undiscounted future cash flows, then the asset is impaired and an impairment loss equal to the difference between the carrying amount of the asset and its fair value is recorded.

An impairment loss is recognized if the carrying amount of an intangible asset is not recoverable and its carrying amount exceeds its fair value. Once an intangible asset has been written down to its fair value, any recovery in value cannot be recognized.

**PASS KEY**

It is important to note the following when testing a fixed asset or an intangible asset with a finite life for impairment:

- Determining the impairment — use undiscounted future net cash flows
- Amount of impairment — use fair value (FV)

**IFRS Difference**

An impairment loss for an asset (except goodwill) *may be reversed* if a change in the estimates used to measure the recoverable amount has occurred. The test for impairment of assets other than goodwill has **one step**: determine whether an asset's carrying amount is greater than its recoverable amount (greater of fair value minus costs to sell or value in use). The impairment test for long-lived assets is described before. Value in use is the present value of the future cash flows expected from the intangible asset. IFRS allows the reversal of impairment losses.



### Impairment Testing for Indefinite-Life Intangibles (one-step impairment test)

An intangible asset with an indefinite useful life (a nonamortized intangible asset) **must** be reviewed for impairment *at least annually*. It is tested more often if events or changes in circumstances suggest that the asset may be impaired.

#### Qualitative Assessment (optional)

An entity *may* elect to perform a qualitative assessment to determine whether a quantitative impairment test is needed. The entity also may directly perform the quantitative test.

After the assessment of qualitative factors, the entity may determine that it is more likely than not (probability > 50%) that an indefinite-lived intangible asset is not impaired. In this case, the quantitative impairment test is not required. If potential impairment is found, the quantitative impairment test must be performed.

#### Quantitative Impairment Test

The carrying amount of an asset is compared with its fair value. If the carrying amount exceeds the fair value, the asset is impaired, and the excess is the recognized impairment loss.

Determination of an Impairment Loss	
1.	Review for impairment
2.	Impairment loss = Carrying amount - Fair value

This impairment loss is **nonreversible**, so the adjusted carrying amount is the new accounting basis.

#### IFRS Difference

A one-step quantitative impairment test is performed. No qualitative assessment exists.

PASS KEY—U.S. GAAP		
	FINITE LIFE	INDEFINITE LIFE
Characteristics	Useful life is limited	Life extends beyond the foreseeable future or cannot be determined
Amortization	Over useful economic life	None
Impairment test	Two-step test: <ul style="list-style-type: none"> <li>Undiscounted net cash flows</li> <li>Fair value</li> </ul>	One-step test: <ul style="list-style-type: none"> <li>Fair value</li> </ul>

### G.Accounting for Research and Development

R&D costs are charged to expense when incurred. Although R&D expenditures may result in the creation of an intangible asset, such as a patent, the difficulty in identifying the costs associated with different projects and the uncertainties inherent in estimating the magnitude of expected benefits led the FASB to require firms to simply expense these costs.



ASC Topic 730, R&D (formerly addressed in FASB Statement No.2), describes research as a planned search to discover new knowledge that may lead to the development of a new product or service. Development involves translating research findings into a plan for a new product or process, including design and testing phases. Routine alterations to existing products are not considered R&D.

### Accounting for R&D

The costs of materials, equipment, facilities, and purchased intangibles are expensed as incurred, unless they have alternative future uses. In that case, they are capitalized and charged to expense as used. Personnel and contract services costs are expensed immediately. Other indirect costs are allocated to R&D on a reasonable basis, except that general and administrative costs usually are not included.

### Costs Similar to R&D

Other costs that typically are expensed as incurred include **start-up costs** for a new operation or activity, initial operating losses incurred by development-stage entities, advertising costs, and costs of developing products or processes (such as computer software) that will be used in a firm's selling and administrative activities.



### H. Goodwill (recognized only in a business combination)

- Goodwill is the representation of intangible resources and elements connected with an entity (e.g. management or marketing expertise or technical skill and knowledge that **cannot be identified** or valued separately). Goodwill means capitalized *excess* earnings power.

### Calculation of Goodwill (Acquisition Method)

Goodwill is the excess of an acquired entity's fair value over the fair value of the entity's net assets, including identifiable intangible assets.

- Goodwill is the *excess* of the cost of an acquired entity over the net of the amounts assigned to assets acquired and liabilities assumed in a business acquisition transaction.
- Goodwill = Cash Paid by the acquirer (for example) – identifiable assets & liabilities assumed for acquiree company.

### Measuring Goodwill

Goodwill is measured as the excess of (a) over (b):

- a. The aggregate of the following:
  1. The **consideration** (e.g. cash, stock, debt), measured at acquisition-date fair value, an acquirer company transfers in a business acquisition
  2. The fair value of any noncontrolling interest in the acquiree company
  3. The acquisition-date fair value of the acquirer company's previously held equity interest in the acquiree company (if being acquired in stages)
- b. The net of the acquisition-date amounts of the **identifiable assets** acquired and the **liabilities assumed** from the acquiree company.

**Maintaining Goodwill**

Costs associated with maintaining, developing, or restoring goodwill are not capitalized as goodwill (they are expensed). In addition, goodwill generated internally or not purchased in an arm's length transaction is not capitalized as goodwill.

**Recording Goodwill**

- Only purchased goodwill is capitalized. Internally created goodwill is **never reported** as an asset.
- Purchased goodwill is recorded as an asset only when an entire business is purchased; it cannot be separated from the business as a whole but is an integral part of the going concern.

When one company purchases another company, a price is determined based on the fair value of the new subsidiary's assets and liabilities, not on the amounts reported on its balance sheet, because these are listed at historical cost.

**Purchasing Company's Audit**

- An audit usually is conducted by the purchasing company or independent agents to arrive at the fair market value of the subsidiary's net assets.
- The long-term assets and liabilities usually have the greatest variance between book and fair value. The audit also seeks out any unrecorded assets or liabilities and accounts for the method of inventory valuation in its fair value estimate.
- Once the fair value is determined, the negotiators settle on a purchase price that usually accounts for intangibles that cannot be valued, such as management expertise, reputation, and the like. Therefore, the purchase price likely will be materially higher than the fair value.

**Bargain Purchase**

In very rare instances, negative goodwill occurs, which is a credit on the purchasing company's books in instances where the purchase price was less than the fair value. Also known as **bargain purchase**, this situation is rare because the seller is more likely to sell off the pieces of the business separately to get the market value.

As an example of goodwill, if a parent company purchases a company as a subsidiary and the net fair market value for the underlying assets and liabilities is \$35 million but the purchase price is \$40 million, the \$5 million difference is accounted for as goodwill.

The calculation demonstrates the allocation of the purchase price.

Calculation of Goodwill

Purchase price	\$40,000,000
Less:	
Cash	\$2,500,000
Receivables	\$5,000,000
Inventories	\$9,000,000
Property, plant, and equipment	\$22,000,000
Patents	\$1,500,000
Liabilities	<u>(5,000,000)</u>
Fair value of identifiable net assets	<u>\$35,000,000</u>
Goodwill	<u>\$ 5,000,000</u>



### **Impairment Testing of Goodwill**

Goodwill is **not amortized** but is also reviewed for impairment annually. Goodwill is also reported on the balance sheet at its historical cost or, if impaired, at its lower fair value (i.e., written down when impairment is determined to have occurred).

The FASB does not believe that goodwill amortization helps investors analyze financial performance, and goodwill is considered to have an indefinite life.

#### **A potential impairment of goodwill exists when**

- the fair value of the reporting unit is less than
- its carrying value, including goodwill.

When a potential impairment exists, the **loss** (if any) must be measured. An impairment loss is recognized for

- the excess of the carrying amount of the reporting unit goodwill over
- the implied fair value of that goodwill.
- The implied fair value of goodwill is determined in a similar manner as that in which it is determined in a business combination.
- The fair value of the reporting unit is allocated to identifiable net assets (including unrecognized intangibles), and any excess is considered implied goodwill.

For example, if a subsidiary had a fair value of \$40 million including goodwill and valued its net identifiable assets (excluding goodwill) at \$36 million, then the implied goodwill would be \$4 million. If the goodwill recorded on the books was \$5 million, it would be written down \$1 million, with an impairment loss recorded for that amount. An impairment loss cannot exceed the carrying amount of goodwill, and after a loss is recognized, it cannot subsequently be reversed.

### **Goodwill is tested for impairment at the reporting- reporting-unit level unit**

Goodwill is tested for impairment at the reporting-unit level. All goodwill is assigned to the reporting units that will benefit from the business combination. It is tested for impairment each year at the same time. A reporting unit is an operating segment, or one level below an operating segment. The goodwill of one reporting unit may be impaired, while the goodwill for other reporting units may or may not be impaired.

## **1: (134) External Financial Statements and Revenue Recognition**

- 1: (8) Concepts of Financial Accounting
- 2: (22) Statement of Financial Position (Balance Sheet)
- 3: (22) Income Statement and Statement of Comprehensive Income
- 4: (20) Statement of Changes in Equity and Equity Transactions
- 5: (44) Statement of Cash Flows
- 6: (11) Revenue Recognition -- Revenue Recognition after Delivery
- 7: (7) Revenue Recognition -- Long-Term Construction Contracts

## **2: (110) Measurement, Valuation, and Disclosure: Investments and Short**

### **Term Items**

- 1: (18) Accounts Receivable
- 2: (14) Inventory -- Fundamentals
- 3: (19) Inventory -- Cost Flow Methods
- 4: (12) Inventory Measurement in the Financial Statements -- Lower of Cost or Market
- 5: (17) Classification of Investments
- 6: (9) Equity Method
- 7: (9) Business Combinations and Consolidated Financial Statements
- 8: (12) Different Types of Expenses and Liabilities

## **3 : ( 114) Measurement, Valuation, and Disclosure: Long-Term Items**

- 1: (27) Property, Plant, and Equipment
- 2: (15) Impairment and Disposal of Long-Lived Assets
- 3: (15) Intangible Assets
- 4: (20) Leases
- 5: (15) Income Taxes
- 6: (12) Accounting for Bonds and Noncurrent Notes Payable
- 7: (10) Accounting for Pensions

1-1: (8) Concepts of Financial Accounting

1-A primary objective of external financial reporting is

- A. Direct measurement of the value of a business enterprise.
- B. Provision of information that is useful to present and potential investors, creditors, and others in making rational financial decisions regarding the enterprise.
- C. Establishment of rules for accruing liabilities.
- D. Direct measurement of the enterprise's stock price.

Answer (B) is correct.

According to the FASB's Conceptual Framework, the objectives of external financial reporting are to provide information that (1) is useful to present and potential investors, creditors, and others in making rational financial decisions regarding the enterprise; (2) helps those parties in assessing the amounts, timing, and uncertainty of prospective cash receipts from dividends or interest and the proceeds from sale, redemption, or maturity of securities or loans; and (3) concerns the economic resources of an enterprise, the claims thereto, and the effects of transactions, events, and circumstances that change its resources and claims thereto.

2-Notes to financial statements are beneficial in meeting the disclosure requirements of financial reporting. The notes should not be used to

- A. Describe significant accounting policies.
- B. Describe depreciation methods employed by the company.
- C. Describe principles and methods peculiar to the industry in which the company operates, when these principles and methods are predominantly followed in that industry.



*D. Correct an improper presentation in the financial statements.*

*Answer (D) is correct.*

*Financial statement notes should not be used to correct improper presentations. The financial statements should be presented correctly on their own. Notes should be used to explain the methods used to prepare the financial statements and the amounts shown. The first footnote typically describes significant accounting policies.*

*3-An objective of financial reporting is*

- A. Providing information useful to investors, creditors, donors, and other users for decision making.*
- B. Assessing the adequacy of internal control.*
- C. Evaluating management results compared with standards.*
- D. Providing information on compliance with established procedures.*

*Answer (A) is correct.*

*The objective is to report financial information that is useful in making decisions about providing resources to the reporting entity. Primary users of financial information are current or prospective investors and creditors who cannot obtain it directly. Their decisions depend on expected returns*

*4-The management of ABC Corporation is analyzing the financial statements of XYZ Corporation because ABC is strongly considering purchasing a block of XYZ ordinary shares that would give ABC significant influence over XYZ. Which financial statement should ABC primarily use to assess the amounts, timing, and certainty of future cash flows of XYZ Company?*

- A. Income statement.*
- B. Statement of changes in equity.*
- C. Statement of cash flows.*
- D. Statement of financial position.*

*Answer (C) is correct.*

*A statement of cash flows provides information about the cash receipts and cash payments of an entity during a period. This information helps investors, creditors, and other users to assess the entity's ability to generate cash and cash equivalents and the needs of the entity to use those cash flows. Historical cash flow data indicate the amount, timing, and certainty of future cash flows. It is also a means of verifying past cash flow assessments and of determining the relationship between profits and net cash flows and the effects of changing prices.*

*5-An entity that sprays chemicals in residences to eliminate or prevent infestation of insects requires that customers prepay for 3 months' service at the beginning of each new quarter. Select the term that appropriately describes this situation from the viewpoint of the entity.*

- A. Deferred income.*
- B. Earned income.*
- C. Accrued income.*
- D. Prepaid expense.*

*Answer (A) is correct.*

*The future inflow of economic benefits is not sufficiently certain given that the entity has not done what is required to be entitled to those benefits. Thus, the receipt of cash in anticipation of goods to be delivered or services to be performed must be recognized as a liability, usually called deferred (or unearned) revenue or deferred (or unearned) income.*

*6-Which of the following is true regarding the comparison of managerial and financial accounting?*

- A. Managerial accounting is generally more precise.*
- B. Managerial accounting has a past focus, and financial accounting has a future focus.*
- C. The emphasis on managerial accounting is relevance, and the emphasis on financial accounting is timeliness.*
- D. Managerial accounting need not follow generally accepted accounting principles (GAAP), while financial accounting must follow them.*



*Answer (D) is correct.*

*Managerial accounting assists management decision making, planning, and control. Financial accounting addresses accounting for an entity's assets, liabilities, revenues, expenses, and other elements of financial statements. Financial statements are the primary method of communicating to external parties information about the entity's results of operations, financial position, and cash flows. For general-purpose financial statements to be useful to external parties, they must be prepared in conformity with accounting principles that are generally accepted in the United States. However, managerial accounting information is primarily directed to specific internal users. Hence, it ordinarily need not follow such guidance.*

*7-The financial statements included in the annual report to the shareholders are least useful to which one of the following?*

- A. Stockbrokers.*
- B. Bankers preparing to lend money.*
- C. Competing businesses.*
- D. Managers in charge of operating activities.*

*Answer (D) is correct.*

*Accrual-basis amounts used in financial reporting are not useful to managers making day-to-day operating decisions. The practice of management accounting fulfills the needs of these user*

*8-The accounting measurement that is not consistent with the going concern concept is*

- A. Historical cost.*
- B. Realization.*
- C. The transaction approach.*
- D. Liquidation value.*

*Answer (D) is correct.*

*Financial accounting principles assume that a business entity is a going concern in the absence of evidence to the contrary. The concept justifies the use of depreciation and amortization schedules, and the recording of assets and liabilities using attributes other than liquidation value*

*1-2: (22) Statement of Financial Position (Balance Sheet)*

*9-The primary purpose of the statement of financial position is to reflect*

- A. The fair value of the firm's assets at some moment in time.*
- B. The status of the firm's assets in case of forced liquidation of the firm.*
- C. The success of a company's operations for a given amount of time.*
- D. Items of value, debt, and net worth.*

*Answer (D) is correct.*

*The balance sheet presents three major financial accounting elements: assets (items of value), liabilities (debts), and equity (net worth). According to the FASB's Conceptual Framework, assets are probable future economic benefits resulting from past transactions or events. Liabilities are probable future sacrifices of economic benefits arising from present obligations as a result of past transactions or events. Equity is the residual interest in the assets after deduction of liabilities*

*10-Prepaid expenses are valued on the statement of financial position at the*

- A. Cost to acquire the asset.*
- B. Face amount collectible at maturity.*
- C. Cost to acquire minus accumulated amortization.*
- D. Cost less expired or used portion.*

*Answer (D) is correct.*

*Prepaid expenses, such as supplies, prepaid rent, and prepaid insurance, are reported on the balance sheet at cost minus the expired or used portion. These are typically current assets.*

11-A statement of financial position allows investors to assess all of the following except the

- A. Efficiency with which enterprise assets are used.
- B. Liquidity and financial flexibility of the enterprise.
- C. Capital structure of the enterprise.
- D. Net realizable value of enterprise assets.

Answer (D) is correct.

Assets are usually measured at original historical cost in a statement of financial position, although some exceptions exist. For example, some short-term receivables are reported at their net realizable value. Thus, the statement of financial position cannot be relied upon to assess NRV.

12-The accounting equation (assets – liabilities = equity) reflects the

- A. Entity point of view.
- B. Fund theory.
- C. Proprietary point of view.
- D. Enterprise theory.

Answer (C) is correct.

The equation is based on the proprietary theory. Equity in an enterprise is what remains after the economic obligations of the enterprise are deducted from its economic resources

13-Long-term obligations that are or will become callable by the creditor because of the debtor's violation of a provision of the debt agreement at the balance sheet date should be classified as

- A. Long-term liabilities.
- B. Current liabilities unless the debtor goes bankrupt.
- C. Current liabilities unless the creditor has waived the right to demand repayment for more than 1 year from the balance sheet date.
- D. Contingent liabilities until the violation is corrected.

Answer (C) is correct.

Long-term obligations that are or will become callable by the creditor because of the debtor's violation of a provision of the debt agreement at the balance sheet date normally are classified as current liabilities. However, the debt need not be reclassified if the violation will be cured within a specified grace period or if the creditor formally waives or subsequently loses the right to demand repayment for a period of more than a year from the balance sheet date (also, reclassification is not required if the debtor expects and has the ability to refinance the obligation on a long-term basis).

14-When classifying assets as current and noncurrent for reporting purposes,

- A. The amounts at which current assets are carried and reported must reflect realizable cash values.
- B. Prepayments for items such as insurance or rent are included in an "other assets" group rather than as current assets as they will ultimately be expensed.
- C. The time period by which current assets are distinguished from noncurrent assets is determined by the seasonal nature of the business.
- D. Assets are classified as current if they are reasonably expected to be realized in cash or consumed during the normal operating cycle.

Answer (D) is correct.

For financial reporting purposes, current assets consist of cash and other assets or resources expected to be realized in cash, sold, or consumed during the longer of 1 year or the normal operating cycle of the business.

15-Abernathy Corporation uses a calendar year for financial and tax reporting purposes and has \$100 million of mortgage bonds due on January 15, Year 2. By January 10, Year 2, Abernathy intends to refinance this debt with new long-term mortgage bonds and has entered into a financing agreement that clearly demonstrates its ability to consummate the refinancing. This debt is to be

- A. Classified as a current liability on the statement of financial position at December 31, Year 1.
- B. Classified as a long-term liability on the statement of financial position at December 31, Year 1.
- C. Retired as of December 31, Year 1.

*D. Considered off-balance-sheet debt.*

*Answer (B) is correct.*

*Short-term obligations expected to be refinanced should be reported as current liabilities unless the firm both plans to refinance and has the ability to refinance the debt on a long-term basis. The ability to refinance on a long-term basis is evidenced by a post-balance-sheet date issuance of long-term debt or a financing arrangement that will clearly permit long-term refinancing.*

*16-Lister Company intends to refinance a portion of its short-term debt in Year 2 and is negotiating a long-term financing agreement with a local bank. This agreement would be non-cancelable and would extend for a period of 2 years. The amount of short-term debt that Lister Company can exclude from its statement of financial position at December 31, Year 1,*

- A. May exceed the amount available for refinancing under the agreement.*
- B. Depends on the demonstrated ability to consummate the refinancing.*
- C. Is reduced by the proportionate change in the working capital ratio.*
- D. Is zero unless the refinancing has occurred by year end.*

*Answer (B) is correct.*

*If an enterprise intends to refinance short-term obligations on a long-term basis and demonstrates an ability to consummate the refinancing, the obligations should be excluded from current liabilities and classified as noncurrent. The ability to consummate the refinancing may be demonstrated by a post-balance-sheet-date issuance of a long-term obligation or equity securities, or by entering into a financing agreement that meets certain criteria. These criteria are that the agreement does not expire within 1 year, it is noncancelable by the lender, no violation of the agreement exists at the balance sheet date, and the lender is financially capable of honoring the agreement.*

*17-A statement of financial position is intended to help investors and creditors*

- A. Assess the amount, timing, and uncertainty of prospective net cash inflows of a firm.*
- B. Evaluate economic resources and obligations of a firm.*
- C. Evaluate economic performance of a firm.*
- D. Evaluate changes in the ownership equity of a firm.*

*Answer (B) is correct.*

*The statement of financial position, or balance sheet, provides information about an entity's resource structure (assets) and financing structure (liabilities and equity) at a moment in time. According to the FASB's Conceptual Framework, the statement of financial position does not purport to show the value of a business, but it enables investors, creditors, and other users to make their own estimates of value. It helps users to assess liquidity, financial flexibility, profitability, and risk*

*18-A manufacturer receives an advance payment for special-order goods that are to be manufactured and delivered within the next year. The advance payment should be reported in the manufacturer's current-year statement of financial position as a(n)*

- A. Current liability.*
- B. Noncurrent liability.*
- C. Contra asset amount.*
- D. Accrued revenue*

*Answer (A) is correct.*

*The entity has not substantially completed what it must do to be entitled to the benefits of the advance payment, and the receipt of future economic benefits is not sufficiently certain to justify income recognition. Accordingly, the receipt of cash in anticipation of goods to be delivered or services to be performed must be recognized as a liability, usually called deferred (or unearned) revenue or deferred (or unearned) income. Because the manufacturer must deliver the goods within the next year, this liability is current.*

19-A cable television entity receives deposits from customers that are refunded when service is terminated. The average customer stays with the entity 8 years. How should these deposits be shown on the financial statements?

- A. Operating revenue.
- B. Other revenue.
- C. Paid-in capital.
- D. Liability.

Answer (D) is correct.

Liabilities are present obligations arising from past events, the settlement of which is expected to result in an outflow of resources embodying economic benefits. Customers' deposits must be returned or credited to their accounts. The deposits should therefore be recorded as liabilities

20-A company has outstanding accounts payable of \$30,000 and a short-term construction loan in the amount of \$100,000 at year end. The loan was refinanced through issuance of long-term bonds after year end but before issuance of financial statements. How should these liabilities be recorded in the balance sheet?

- A. Noncurrent liabilities of \$130,000.
- B. Current liabilities of \$130,000.
- C. Current liabilities of \$30,000, noncurrent liabilities of \$100,000.
- D. Current liabilities of \$130,000, with required footnote disclosure of the refinancing of the loan.

Answer (C) is correct.

Accounts payable are properly classified as current liabilities because they are for items entering into the operating cycle. Short-term debt that is refinanced by a post-balance-sheet-date issuance of long-term debt should be classified as noncurrent. (The ability to refinance on a long-term basis has been demonstrated.) Thus, the short-term construction loan is classified as noncurrent. Accordingly, the entity records current liabilities of \$30,000 and noncurrent liabilities of \$100,000.

21-A statement of financial position provides a basis for all of the following except

- A. Computing rates of return.
- B. Evaluating capital structure.
- C. Assessing liquidity and financial flexibility.
- D. Determining profitability and assessing past performance.

Answer (D) is correct.

The statement of financial position, also known as the balance sheet, reports an entity's financial position at a moment in time. It is therefore not useful for assessing past performance for a period of time. A balance sheet can be used to help users assess liquidity, financial flexibility, and risk

22-Noncurrent debt should be included in the current section of the statement of financial position if

- A. It is to be converted into common stock before maturity.
- B. It matures within the year and will be retired through the use of current assets.
- C. Management plans to refinance it within the year.
- D. A bond retirement fund has been set up for use in its scheduled retirement during the next year.

Answer (B) is correct.

Current liabilities include those obligations that are expected to be satisfied by the (1) payment of cash, (2) use of current assets other than cash, or (3) creation of new current liabilities within 1 year from the balance sheet date (or operating cycle, if longer).

23-Dixon Company has the following items recorded on its financial records:

Available-for-sale securities	\$200,000
Prepaid expenses	400,000
Treasury stock	100,000

The total amount of the above items to be shown as assets on Dixon's statement of financial position is

- A. \$400,000
- B. \$500,000
- C. \$600,000

D. \$700,000

*Answer (C) is correct.*

*Available-for-sale securities (an investment) and prepaid expenses are assets, but treasury stock is an equity item. The total of the assets reported is therefore \$600,000 (\$200,000 + \$400,000).*

*24-A receivable classified as current on the statement of financial position is expected to be collected within*

- A. The current operating cycle.*
- B. 1 year.*
- C. The current operating cycle or 1 year, whichever is longer.*
- D. The current operating cycle or 1 year, whichever is shorter.*

*Answer (C) is correct.*

*Current assets are reasonably expected to be realized in cash, sold, or consumed during the normal operating cycle of the business or within 1 year, whichever is longer. The operating cycle is the time between the acquisition of materials or services and the final cash realization from the earning process.*

*25-A company pays more than the fair value to acquire treasury stock. The difference between the price paid to acquire the treasury stock and the fair value should be recorded as*

- A. An asset.*
- B. A liability.*
- C. Shareholders' equity.*
- D. An expense.*

*Answer (C) is correct.*

*Apart from cash paid or received, a firm cannot recognize assets, liabilities, gains, or losses from transactions in its own stock. Treasury stock is reported on the balance sheet as a subtraction from equity.*

*26-The purchase of treasury stock is recorded on the statement of financial position as a(n)*

- A. Increase in assets.*
- B. Decrease in liabilities.*
- C. Increase in shareholders' equity.*
- D. Decrease in shareholders' equity.*

*Answer (D) is correct.*

*The purchase of treasury stock is recorded on the statement of financial position as a decrease in shareholders' equity.*

*27-Current assets are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business. Current assets most likely include*

- A. Intangible assets.*
- B. Purchased goodwill.*
- C. Organizational costs.*
- D. Trading securities.*

*Answer (D) is correct.*

*Current assets include, in descending order of liquidity, cash and cash equivalents; certain individual trading, available-for-sale, and held-to-maturity securities; receivables; inventories; and prepaid expenses. Trading securities are expected to be sold in the near term, so they are likely to be classified as current.*

*28-Rice Co. was incorporated on January 1, Year 6, with \$500,000 from the issuance of stock and borrowed funds of \$75,000. During the first year of operations, net income was \$25,000. On December 15, Rice paid a \$2,000 cash dividend. No additional activities affected equity in Year 6. At December 31, Year 6, Rice's liabilities had increased to \$94,000. In Rice's December 31, Year 6 balance sheet, total assets should be reported at*

- A. \$598,000*

- B. \$600,000
- C. \$617,000
- D. \$692,000

*Answer (C) is correct.*

*Total assets equal the sum of total liabilities and equity. Total liabilities were \$94,000 at year end, and equity amounted to \$523,000 (\$500,000 from issuance of stock + \$25,000 net income – \$2,000 cash dividend). Total assets are therefore \$617,000 (\$523,000 + \$94,000).*

*29-Careful reading of an annual report will reveal that off-balance-sheet debt includes*

- A. Amounts due in future years under operating leases.
- B. Transfers of accounts receivable without recourse.
- C. Current portion of long-term debt.
- D. Amounts due in future years under capital leases.

*Answer (A) is correct.*

*Off-balance-sheet debt includes any type of liability for which the company is responsible but that does not appear on the balance sheet. The most common example is the amount due in future years on operating leases. Under U.S. GAAP, operating leases are not capitalized; instead, only the periodic payments of rent are reported when actually paid. Capital leases (those similar to a purchase) must be capitalized and reported as liabilities.*

*30-Which one of the following is not a form of off-balance-sheet financing?*

- A. Sale of receivables.
- B. Foreign currency translations.
- C. Operating leases.
- D. Special purpose entities.

*Answer (B) is correct.*

*Off-balance-sheet financing takes four principal forms: investments in unconsolidated subsidiaries, special purpose entities, operating leases, and factoring receivables with recourse.*

*1-3: (22) Income Statement and Statement of Comprehensive Income*

*31-In a multiple-step income statement for a retail company, all of the following are included in the operating section except*

- A. Sales.
- B. Cost of goods sold.
- C. Dividend revenue.
- D. Administrative and selling expenses.

*Answer (C) is correct.*

*The operating section of a retailer's income statement includes all revenues and costs necessary for the operation of the retail establishment, e.g., sales, cost of goods sold, administrative expenses, and selling expenses. Dividend revenue, however, is classified under other revenues. In a statement of cash flows, cash dividends received are considered an operating cash flow*

*32-When reporting extraordinary items,*

- A. Each item (net of tax) is presented on the face of the income statement separately as a component of net income for the period.
- B. Each item is presented exclusive of any related income tax.
- C. Each item is presented as an unusual item within income from continuing operations.
- D. All extraordinary gains or losses that occur in a period are summarized as total gains and total losses, then offset to present the net extraordinary gain or loss.

*Answer (A) is correct.*

*Extraordinary items are reported net of tax after discontinued operations.*

**33-Which one of the following items is included in the determination of income from continuing operations?**

- A. Discontinued operations.*
- B. Extraordinary loss.*
- C. Cumulative effect of a change in an accounting principle.*
- D. Unusual loss from a write-down of inventory.*

*Answer (D) is correct.*

*Certain items ordinarily are not to be treated as extraordinary gains and losses. Rather, they are included in the determination of income from continuing operations. These gains and losses include those from write-downs of receivables and inventories, translation of foreign currency amounts, disposal of a business segment, sale of productive assets, strikes, and accruals on long-term contracts. A write-down of inventory is therefore included in the computation of income from continuing operations.*

**34-Which one of the following would be shown on a multiple-step income statement but not on a single-step income statement?**

- A. Loss from discontinued operations.*
- B. Gross profit.*
- C. Extraordinary gain.*
- D. Net income from continuing operations.*

*Answer (B) is correct.*

*A single-step income statement combines all revenues and gains, combines all expenses and losses, and subtracts the latter from the former in a "single step" to arrive at net income. Gross profit, being the difference between sales revenue and cost of goods sold, does not appear on a single-step income statement.*

**35-The major segments of the statement of retained earnings for a period are**

- A. Dividends declared, prior period adjustments, and changes due to treasury stock transactions.*
- B. Before-tax income or loss and dividends paid or declared.*
- C. Prior-period adjustments, before-tax income or loss, income tax, and dividends paid.*
- D. Net income or loss, prior-period adjustments, and dividends paid or declared.*

*Answer (D) is correct.*

*The statement of retained earnings is a basic financial statement. Together with the income statement, the statement of retained earnings is meant to broadly reflect the results of operations. The statement of retained earnings consists of beginning retained earnings adjusted for any prior period adjustment (net of tax), with further adjustments for income (loss), dividends, and in certain other rare adjustments, e.g., quasi-reorganizations. The final figure is ending retained earnings.*

**36-Because of inexact estimates of the service life and the residual value of a plant asset, a fully depreciated asset was sold in the current year at a material gain. This gain most likely should be reported**

- A. In the other revenues and gains section of the current income statement.*
- B. As part of sales revenue on the current income statement.*
- C. In the extraordinary item section of the current income statement.*
- D. As an adjustment to prior periods' depreciation on the statement of changes in equity.*

*Answer (A) is correct.*

*Revenues occur in the course of ordinary activities. Gains may or may not occur in the course of ordinary activities. For example, gains may occur from the sale of noncurrent assets. Thus, the gain on the sale of a plant asset is not an operating item and should be classified in an income statement with separate operating and non-operating sections in the other revenues and gains section.*

37-In recording transactions, which of the following best describes the relation between expenses and losses?

- A. Losses are extraordinary charges to income, whereas expenses are ordinary charges to income.
- B. Losses are material items, whereas expenses are immaterial items.
- C. Losses are expenses that may or may not arise in the course of ordinary activities.
- D. Expenses can always be prevented, whereas losses can never be prevented.

Answer (C) is correct.

Expenses are outflow or other usage of assets or incurrences of liability (or both) from activities that qualify as ongoing major or central operations. Losses are similar to expenses but generally do not occur in ordinary activities. For example, losses may result from the sale of noncurrent assets or from natural disasters.

38-An entity has a 50% gross margin, general and administrative expenses of \$50, interest expense of \$20, and net income of \$10 for the year just ended. If the corporate tax rate is 50%, the level of sales revenue for the year just ended was

- A. \$90
- B. \$135
- C. \$150
- D. \$180

Answer (D) is correct.

Net income equals sales minus cost of sales, G&A expenses, interest, and tax. Given a 50% tax rate, income before tax must have been \$20 [ $\$10 \text{ net income} \div (1.0 - 0.5 \text{ tax rate})$ ]. Accordingly, income before interest and tax must have been \$40 (\$20 income before tax + \$20 interest), and the gross margin (sales – cost of sales) must have been \$90 (\$40 income before interest and tax + \$50 G&A expenses). If the gross margin is 50% of sales, sales equals \$180 ( $\$90 \text{ gross margin} \div 0.5$ ).

39-Assume that employees confessed to a \$500,000 inventory theft but are not able to make restitution. How should this material fraud be shown in the company's financial statements?

- A. Classified as a loss and shown as a separate line item in the income statement.
- B. Initially classified as an accounts receivable because the employees are responsible for the goods. Because they cannot pay, the loss would be recognized as a write-off of accounts receivable.
- C. Included in cost of goods sold because the goods are not on hand, losses on inventory shrinkage are ordinary, and it would cause the least amount of attention.
- D. Recorded directly to retained earnings because it is not an income-producing item.

Answer (A) is correct.

Losses may or may not occur in the course of ordinary activities. For example, they may result from nonreciprocal transactions (e.g., theft), reciprocal transactions (e.g., a sale of plant assets), or from holding assets or liabilities. Losses are typically displayed separately.

40-An entity had the following opening and closing inventory balances during the current year:

	1/1	12/31
Finished goods	\$ 90,000	\$260,000
Raw materials	105,000	130,000
Work-in-progress	220,000	175,000

The following transactions and events occurred during the current year:

- \$300,000 of raw materials were purchased, of which \$20,000 were returned because of defects.
- \$600,000 of direct labor costs were incurred.
- \$750,000 of production overhead costs were incurred.
- The cost of goods sold for the current year ended December 31 would be

- A. \$1,480,000
- B. \$1,500,000
- C. \$1,610,000
- D. \$1,650,000



Answer (A) is correct.

Cost of goods sold equals cost of goods manufactured (COGM) adjusted for the change in finished goods. COGM equals the sum of raw materials used, direct labor costs, and production overhead, adjusted for the change in work-in-progress. Raw materials used equals \$255,000 (\$105,000 BI + \$300,000 purchases – \$20,000 returns – \$130,000 EI). Thus, COGM equals \$1,650,000 (\$255,000 RM + \$600,000 DL + \$750,000 OH + \$220,000 BWIP – \$175,000 EWIP), and COGS equals \$1,480,000 (\$1,650,000 COGM + \$90,000 BFG – \$260,000 EFG)

41-The profit and loss statement of Madengrad Mining includes the following information for the current fiscal year:

Sales \$160,000

Gross profit 48,000

Year-end finished goods inventory 58,300

Opening finished goods inventory 60,190

The cost of goods manufactured by Madengrad for the current fiscal year is

A. \$46,110

B. \$49,890

C. \$110,110

D. \$113,890

Answer (C) is **correct**.

Madengrad's cost of goods manufactured can be calculated as follows:

Sales	\$160,000
Less: gross profit	(48,000)
Cost of goods sold	\$112,000
Add: ending finished goods	58,300
Goods available for sale	\$170,300
Less: beginning finished goods	(60,190)
Cost of goods manufactured	\$110,110

42-If the beginning balance for May of the materials inventory account was \$27,500, the ending balance for May is \$28,750, and \$128,900 of materials were used during the month, the materials purchased during the month cost

A. \$101,400

B. \$127,650

C. \$130,150

D. \$157,650

Answer (C) is correct.

Purchases equals usage adjusted for the inventory change. Hence, purchases equals \$130,150 (\$128,900 used – \$27,500 BI + \$28,750 EI).

43-Given the following data for Scurry Company, what is the cost of goods sold?

Beginning inventory of finished goods \$100,000

Cost of goods manufactured 700,000

Ending inventory of finished goods 200,000

Beginning work-in-process inventor 300,000

Ending work-in-process inventory 50,000

A. \$500,000

B. \$600,000

C. \$800,000

D. \$950,000

Answer (B) is **correct**.

Scurry's cost of goods sold can be calculated as follows:

Beginning inventory of finished goods	\$ 100,000
Add: cost of goods manufactured	700,000
Less: ending inventory of finished goods	(200,000)
Cost of goods sold	\$ 600,000

44-The following information was taken from last year's accounting records of a manufacturing company.

Inventory	January 1	December 31
Raw material	\$38,000	\$ 45,000
Work-in-process	21,000	10,000
Finished goods	78,000	107,000

Other information

Direct labor	\$236,000
Shipping costs on outgoing orders	6,500
Factory rent	59,000
Factory depreciation	18,700
Advertising expense	24,900
Net purchases of raw materials	115,000
Corporate administrative salaries	178,000
Material handling costs	35,800

On the basis of this information, the company's cost of goods manufactured and cost of goods sold are

- A. \$460,500 and \$489,500, respectively.
- B. \$468,500 and \$439,500, respectively.
- C. \$468,500 and \$470,900, respectively.
- D. \$646,500 and \$617,500, respectively.

Answer (B) is <b>correct</b> .	
This solution requires a series of computations.	
Beginning raw materials	\$ 38,000
Add: net purchases raw materials	\$115,000
Materials available	\$153,000
Less: ending materials	(45,000)
Materials used in production	\$108,000
Direct labor	236,000
Manufacturing overhead	
Factory rent	\$59,000
Factory depreciation	18,700
Material handling costs	35,800
Total Manufacturing overhead	113,500
Total manufacturing costs	\$457,500
Add: beginning work-in-process	21,000
Less: ending work-in-process	(10,000)
<b>Costs of Goods Manufactured</b>	<b>\$468,500</b>
Add: beginning finished goods	78,000
Less: ending finished goods	(107,000)
<b>Cost of Goods Sold</b>	<b>\$439,500</b>

45-Comprehensive income is best defined as

- A. Net income excluding extraordinary gains and losses.
- B. The change in net assets for the period including contributions by owners and distributions to owners.
- C. Total revenues minus total expenses.
- D. The change in net assets for the period excluding owner transactions.

Answer (D) is correct.

Comprehensive income includes all changes in equity of a business entity except those changes resulting from investments by owners and distributions to owners. Comprehensive income includes two major categories: net income and other comprehensive income (OCI). Net income includes the results of operations classified as income from continuing operations, discontinued operations, and extraordinary items. Components of comprehensive income not included in the determination of net income are included in OCI, for example, unrealized gains and losses on available-for-sale securities (except those that are hedged items in a fair value hedge).

46-The financial statement that provides a summary of the firm's operations for a period of time is the

- A. Income statement.
- B. Statement of financial position.
- C. Statement of shareholders' equity.
- D. Statement of retained earnings.

Answer (A) is correct.

The results of operations for a period of time are reported in the income statement (statement of earnings) on the accrual basis using an approach oriented to historical transactions

47-The following information pertains to Maynard Corporation's income statement for the 12 months just ended. The company has an effective income tax rate of 40%.

Discontinued operations \$(70,000)  
Extraordinary loss due to earthquake (90,000)  
Income from continuing operations (net of tax) 72,000  
Cumulative effect of change in accounting principle 60,000  
Maynard's net income for the year is

- A. \$36,000
- B. \$12,000
- C. \$8,000
- D. \$(24,000)

Answer (D) is **correct**.

Maynard's net income for the year is calculated as follows:

	Income Statement Item	Times: Tax Effect	As Reported
Income from continuing operations (net of tax)			\$ 72,000
Discontinued operations	\$(70,000)	(1.0 - .40)	(42,000)
Extraordinary loss due to earthquake	(90,000)	(1.0 - .40)	(54,000)
Net income			<u>\$(24,000)</u>

48-Which of the following items is not classified as other comprehensive income (OCI)?

- A. Extraordinary gains from extinguishment of debt.
- B. Foreign currency translation adjustments.
- C. Prior service cost adjustment resulting from amendment of a defined benefit pension plan.
- D. Unrealized gains for the year on available-for-sale marketable securities.

Answer (A) is correct.

Comprehensive income is divided into net income and other comprehensive income (OCI). Under existing accounting standards, OCI includes (1) unrealized gains and losses on available-for-sale securities (except those that are hedged items in a fair value hedge); (2) gains and losses on derivatives designated, qualifying, and effective as cash flow hedges; (3) certain amounts associated with recognition of the funded status of postretirement defined benefit plans; and (4) certain foreign currency items, including foreign currency translations.

49-Which of the following are acceptable formats for reporting comprehensive income?

- I. In one continuous financial statement
  - II. In a statement of changes in equity
  - III. In a separate statement of net income
  - IV. In two separate but consecutive financial statements
- A. I and II only.
  - B. I, II, and III only.
  - C. III and IV only.

D. I and IV only.

Answer (D) is correct.

If an entity that presents a full set of financial statements has items of other comprehensive income (OCI), it must present comprehensive income either (1) in a single continuous statement of comprehensive income or (2) in two separate but consecutive statements (an income statement and a statement of OCI).

50-A company reports the following information as of December 31:

Sales revenue       \$800,000

Cost of goods sold   600,000

Operating expenses   90,000

Unrealized holding gain on available-for-sale securities, net of tax 30,000

What amount should the company report as comprehensive income as of December 31?

A. \$30,000

B. \$110,000

C. \$140,000

D. \$200,000

Answer (C) is correct.

Comprehensive income includes net income and other comprehensive income. Net income equals \$110,000 (\$800,000 sales revenue – \$600,000 COGS – \$90,000 operating expenses). Unrealized holding gains on available-for-sale securities (\$30,000) are included in other comprehensive income. Thus, comprehensive income is \$140,000 (\$110,000 + \$30,000).

51-Crawford Company is researching a future change to IFRS. Which one of the following items reported on Crawford's income statement under U.S. GAAP is required to be changed as a result of adopting IFRS?

A. Crawford values its merchandise inventory using average cost.

B. Crawford uses a multiple-step approach for its income statement.

C. Crawford uses historical cost to value its land, buildings, and intangible assets even though the value of the land and building are greater than book value.

D. Crawford's current-year income statement includes an extraordinary loss.

Answer (D) is correct.

Under U.S. GAAP, material transactions that are both unusual in nature and infrequent in occurrence in the environment in which the company operates are classified as extraordinary items. Extraordinary items are reported individually in a separate section in the income statement, net of tax. Under IFRS, no item is classified as extraordinary, and therefore it would be recorded in the normal part of the income statement.

52-All of the following are defined as elements of an income statement except

A. Expenses.

B. Shareholders' equity.

C. Gains and losses.

D. Revenues

Answer (B) is correct.

Equity of a business entity (or the net assets of a nonbusiness organization) is a residual amount that reflects the basic accounting equation: assets minus liabilities equals equity (or net assets). It is reported on the statement of financial position.

**1-4: (20) Statement of Changes in Equity and Equity Transactions**

**53-Items reported as prior-period adjustments**

- A. Do not include the effect of a mistake in the application of accounting principles, as this is accounted for as a change in accounting principle rather than as a prior-period adjustment.
- B. Do not affect the presentation of prior-period comparative financial statements.
- C. Do not require further disclosure in the body of the financial statements.
- D. Are reflected as adjustments of the opening balance of the retained earnings of the earliest period presented.

Answer (D) is correct.

Prior-period adjustments are made for the correction of errors. According to SFAS 16, Prior Period Adjustments, the effects of errors on prior-period financial statements are reported as adjustments to beginning retained earnings for the earliest period presented in the retained earnings statement. Such errors do not affect the income statement for the current period.

**54-An appropriation of retained earnings by the board of directors of a corporation for bonded indebtedness will result in**

- A. The establishment of a sinking fund to retire bonds when they mature.
- B. A decrease in cash on the balance sheet with an equal increase in the investment and funds section of the balance sheet.
- C. A decrease in the total amount of retained earnings presented on the balance sheet.
- D. The disclosure that management does not intend to distribute assets, in the form of dividends, equal to the amount of the appropriation.

Answer (D) is correct.

The appropriation of retained earnings is a transfer from one retained earnings account to another. The only practical effect is to decrease the amount of retained earnings available for dividends. An appropriation of retained earnings is purely for disclosure purposes.

**55-When treasury stock is accounted for at cost, the cost is reported on the balance sheet as a(n)**

- A. Asset.
- B. Reduction of retained earnings.
- C. Reduction of additional paid-in-capital.
- D. Unallocated reduction of equity.

Answer (D) is correct.

Treasury stock is a corporation's own stock that has been reacquired but not retired. In the balance sheet, treasury stock recorded at cost is subtracted from the total of the capital stock balances, additional paid-in capital, retained earnings, and accumulated other comprehensive income.

**56-The statement of shareholders' equity shows a**

- A. Reconciliation of the beginning and ending balances in shareholders' equity accounts.
- B. Listing of all shareholders' equity accounts and their corresponding dollar amounts.
- C. Computation of the number of shares outstanding used for earnings per share calculations.
- D. Reconciliation of net income to net operating cash flow.

Answer (A) is correct.

The statement of shareholders' equity (changes in equity) presents a reconciliation in columnar format of the beginning and ending balances in the various shareholders' equity accounts. A statement of changes in equity may include, for example, columns for (1) totals, (2) comprehensive income, (3) retained earnings, (4) accumulated OCI (but the components of OCI are presented in another statement), (5) common stock, and (6) additional paid-in capital.

**57-Unless the shares are specifically restricted, a holder of common stock with a preemptive right may share proportionately in all of the following except**

- A. The vote for directors.
- B. Corporate assets upon liquidation.

- C. Cumulative dividends.
- D. New issues of stock of the same class.

*Answer (C) is correct.*

*Common stock does not have the right to accumulate unpaid dividends. This right is often attached to preferred stock.*

58-Which one of the following statements is correct regarding the effect preferred stock has on a company?

- A. The firm's after-tax profits are shared equally by common and preferred shareholders.
- B. Control of the firm is now shared by the common and preferred shareholders, with preferred shareholders having greater control.
- C. Preferred shareholders' claims take precedence over the claims of common shareholders in the event of liquidation.
- D. Nonpayment of preferred dividends places the firm in default, as does nonpayment of interest on debt.

*Answer (C) is correct.*

*Preferred stockholders have preference over common stockholders with respect to dividend and liquidation rights, but payment of preferred dividends, unlike bond interest is not mandatory. In exchange for these preferences, the preferred stockholders give up the right to vote. Consequently, preferred stock is a hybrid of debt and equity.*

59-Zinc Co.'s adjusted trial balance at December 31, Year 6, includes the following account balances:

Common stock, \$3 par	\$600,000
Additional paid-in capital	800,000
Treasury stock, at cost	50,000
Net unrealized holding loss on available-for-sale securities	20,000
Retained earnings: appropriated for uninsured earthquake losses	150,000
Retained earnings: unappropriated	200,000

What amount should Zinc report as total equity in its December 31, Year 6, balance sheet?

- A. \$1,680,000
- B. \$1,720,000
- C. \$1,780,000
- D. \$1,820,000

*Answer (A) is correct.*

*Total credits to equity equal \$1,750,000 (\$600,000 common stock at par + \$800,000 additional paid-in capital + \$350,000 retained earnings). The treasury stock recorded at cost is subtracted from (debited to) total equity, and the unrealized holding loss on available-for-sale securities is debited to other comprehensive income, a component of equity. Because total debits equal \$70,000 (\$50,000 cost of treasury stock + \$20,000 unrealized loss on available-for-sale securities), total equity equals \$1,680,000 (\$1,750,000 – \$70,000).*

60-A retained earnings appropriation can be used to

- A. Absorb a fire loss when a company is self-insured.
- B. Provide for a contingent loss that is probable and reasonable.
- C. Smooth periodic income.
- D. Restrict earnings available for dividends.

*Answer (D) is correct.*

*Transfers to and from accounts properly designated as appropriated retained earnings (such as general purpose contingency reserves or provisions for replacement costs of fixed assets) are always excluded from the determination of net income. However, appropriation of retained earnings is permitted if it is displayed within the equity section and is clearly identified. The effect of the appropriation is to restrict the amount of retained earnings available for dividends, not to set aside assets.*

61-Which one of the following statements regarding treasury stock is correct?

- A. It is unretired but no longer outstanding, yet it has all the rights of outstanding shares.
- B. It is an asset representing shares that can be sold in the future or otherwise issued in stock option plans or in effectuating business combinations.
- C. It is unable to participate in the liquidation proceeds of the firm but able to participate in regular cash dividend distributions as well as stock dividends and stock splits.
- D. It is reflected in shareholders' equity as a contra account.

Answer (D) is correct.

Treasury stock recorded at cost is a reduction of total equity. Treasury stock recorded at par is a direct reduction of the pertinent contributed capital balance, e.g., common stock or preferred stock.

62-Tyler Corporation purchased 10,000 shares of its own \$5 par-value common stock for \$25 per share. This stock originally sold for \$28 per share. Tyler used the cost method to record this transaction. If the par-value method had been used rather than the cost method, which of the following accounts would show a different dollar amount?

- A. Treasury stock and total shareholders' equity.
- B. Additional paid-in capital and retained earnings.
- C. Paid-in capital from treasury stock and retained earnings.
- D. Additional paid-in capital and treasury stock.

Answer (D) is correct.

Under the cost method, the treasury stock account was debited for the full market price of the shares; had the par-value method been used, treasury stock would only have been debited for the par value of the shares.

Under the cost method, the additional paid-in capital account was not affected; had the par-value method been used, additional paid-in capital would have been debited for the excess of the market price of the shares over par.

63-On December 1, Noble Inc.'s Board of Directors declared a property dividend, payable in stock held in the Multon Company. The dividend was payable on January 5. The investment in Multon stock had an original cost of \$100,000 when acquired 2 years ago. The market value of this investment was \$150,000 on December 1, \$175,000 on December 31, and \$160,000 on January 5. The amount to be shown on Noble's statement of financial position at December 31 as property dividends payable would be

- A. \$100,000
- B. \$150,000
- C. \$160,000
- D. \$175,000

Answer (B) is correct.

When a property dividend is declared, the property is remeasured at its fair value as of the declaration date. This amount is then reclassified from retained earnings to property dividends payable.

64-Garland Corporation, a public company, has declared a property dividend of one share of its investment in Marlowe, Inc., for every 10 shares of its common stock outstanding. The Marlowe shares were originally purchased by Garland for \$50 per share; on the date the dividend was declared, the market value was \$75 per share. As a result of this declaration, Garland should recognize

- A. A loss of \$25 per share to be distributed.
- B. A gain of \$25 per share to be distributed.
- C. No gain or loss.
- D. An appropriate gain or loss based on the market value on the date of distribution.

Answer (B) is correct.

When a property dividend is declared, the property is remeasured at its fair value as of the declaration date (\$75 - \$50 = \$25).

65-Grand Corporation has 10,000,000 shares of \$10 par-value stock authorized, of which 2,000,000 shares are issued and outstanding. The Board of Directors of Grand declared a 2-for-1 stock split on November 30 to be issued on December 30. The stock was selling for \$30 per share on the date of declaration. In addition, the Board has amended the articles of incorporation to allow for a proportional increase in the number of authorized shares. The par-value information appearing in the shareholder's equity section of Grand's statement of financial position at December 31 will be

- A. \$5
- B. \$10
- C. \$15
- D. \$30

Answer (A) is correct.

As a result of the 2-for-1 stock split, the par value of Grand's shares is halved to \$5

66-Fox Company has 1,000,000 shares of common stock authorized, of which 100,000 shares are held as treasury shares; the remainder are held by the company shareholders. On November 1, the Board of Directors declared a cash dividend of \$.10 per share to be paid on January 2. At the same time, the Board declared a 5% stock dividend to be issued on December 31. On the date of the declaration, the stock was selling for \$10 a share, and no fractional shares were to be issued. The total amount of these declarations to be shown as current liabilities on Fox's statement of financial position as of December 31 is

- A. \$90,000
- B. \$100,000
- C. \$540,000
- D. \$600,000

Answer (A) is correct.

Cash dividends are only paid on outstanding shares. Thus, the dividend payable at December 31 is \$90,000  $(900,000 \times \$0.10)$ . Stock dividends distributable are reported in equity, not current liabilities.

67-Bertram Company had a balance of \$100,000 in retained earnings at the beginning of the year and of \$125,000 at the end of the year. Net income for this time period was \$40,000. Bertram's statement of financial position indicated that the dividends payable account had decreased by \$5,000 throughout the year, despite the fact that both cash dividends and a stock dividend were declared. The amount of the stock dividend was \$8,000. When preparing its statement of cash flows for the year, Bertram should show cash paid for dividends as

- A. \$20,000
- B. \$15,000
- C. \$12,000
- D. \$5,000

Answer (C) is **correct**.

The amount of total dividends declared during the year can be calculated as follows:

Beginning retained earnings	\$100,000
Net income for the year	40,000
Ending retained earnings	(125,000)
Dividends declared during the year	<u>\$ 15,000</u>

Since \$8,000 is the amount of stock dividends declared, the amount of cash dividends declared this year is \$7,000  $(\$15,000 - \$8,000)$ . The amount of cash dividends paid during the year can be calculated as follows:

Decrease in the cash dividends payable account during the period	\$ 5,000
Cash dividends declared during the year	<u>7,000</u>
Cash paid for dividends during the year	<u>\$12,000</u>

NOTE: Stock dividends declared does not affect the dividends payable account.



68-How would a stock split affect the par value of the stock and the company's shareholders' equity?

Par Value	Shareholders' Equity
A. Decrease	Increase
B. Decrease	No change
C. Increase	Decrease
D. Increase	No change

Answer (B) is correct.

A stock split reduces the par value of the stock and increases the number of shares outstanding, making it more attractive to investors. As with a stock dividend, each shareholder's proportionate interest in the company and total book value remain unchanged.

69-An undistributed stock dividend declared by the Board of Directors should be reported as a(n)

- A. Current liability.
- B. Long-term liability.
- C. Footnote to the financial statements.
- D. Item in the shareholders' equity section.

Answer (D) is correct.

In accounting for a stock dividend, the fair value of the additional shares issued is reclassified from retained earnings to capital stock and the difference to additional paid in capital. Stock dividend distributable is an item of shareholders' equity and not a liability.

70-Which one of the following statements regarding dividends is correct?

- A. A stock dividend of 15% of the outstanding common shares results in a debit to retained earnings at the par value of the stock distributed.
- B. At the declaration date of a 30% stock dividend, the carrying value of retained earnings will be reduced by the fair market value of the stock distributed.
- C. The declaration of a cash dividend will have no effect on book value per share.
- D. The declaration and payment of a 10% stock dividend will result in a reduction of retained earnings at the fair market value of the stock.

Answer (D) is correct.

When a small stock dividend is declared (less than 20% to 25% of the previously outstanding common shares), retained earnings is debited for the fair value of the stock

71-Which one of the following transactions does not affect the balance of retained earnings?

- A. Declaration of a stock dividend.
- B. A quasi-reorganization.
- C. Declaration of a stock split.
- D. Declaration of a property dividend.

Answer (C) is correct.

In a stock split, no journal entry is recorded and no retained earnings are reclassified.

72-Underhall, Inc.'s common stock is currently selling for \$108 per share. Underhall is planning a new stock issue in the near future and would like to stimulate interest in the company. The Board, however, does not want to distribute capital at this time. Therefore, Underhall is considering whether to offer a 2-for-1 common stock split or a 100% stock dividend on its common stock. The best reason for opting for the stock split is that

- A. It will not decrease shareholders' equity.
- B. It will not impair the company's ability to pay dividends in the future.
- C. The impact on earnings per share will not be as great.
- D. The par value per share will remain unchanged.

*Answer (B) is correct.*

*A 2-for-1 stock split doubles the number of shares outstanding; retained earnings is not affected. Under a stock dividend, however, a portion of retained earnings is reclassified as common stock. Since dividends are restricted by the amount of available retained earnings, a stock dividend, but not a stock split, will impair the firm's ability to pay dividends in the future.*

**1-5: (44) Statement of Cash Flows**

**73-When preparing the statement of cash flows, companies are required to report separately as operating cash flows all of the following except**

- A. Interest received on investments in bonds.**
- B. Interest paid on the company's bonds.**
- C. Cash collected from customers.**
- D. Cash dividends paid on the company's stock.**

*Answer (D) is correct.*

*In general, the cash flows from transactions and other events that enter into the determination of income are to be classified as operating. Cash receipts from sales of goods and services, from interest on loans, and from dividends on equity securities are from operating activities. Cash payments to suppliers for inventory; to employees for wages; to other suppliers and employees for other goods and services; to governments for taxes, duties, fines, and fees; and to lenders for interest are also from operating activities. However, distributions to owners (cash dividends on a company's own stock) are cash flows from financing, not operating, activities.*

**74-A statement of cash flows is intended to help users of financial statements**

- A. Evaluate a firm's liquidity, solvency, and financial flexibility.**
- B. Evaluate a firm's economic resources and obligations.**
- C. Determine a firm's components of income from operations.**
- D. Determine whether insiders have sold or purchased the firm's stock.**

*Answer (A) is correct.*

*The primary purpose of a statement of cash flows is to provide information about the cash receipts and payments of an entity during a period. If used with information in the other financial statements, the statement of cash flows should help users to assess the entity's ability to generate positive future net cash flows (liquidity), its ability to meet obligations (solvency) and pay dividends, the need for external financing, the reasons for differences between income and cash receipts and payments, and the cash and noncash aspects of the investing and financing activities.*

**75-Which of the following items is specifically included in the body of a statement of cash flows?**

- A. Operating and non-operating cash flow information.**
- B. Conversion of debt to equity.**
- C. Acquiring an asset through a capital lease.**
- D. Purchasing a building by giving a mortgage to the seller.**

*Answer (A) is correct.*

*All noncash transactions are excluded from the body of the statement of cash flows to avoid undue complexity and detract from the objective of providing information about cash flows. Information about all noncash financing and investing activities affecting recognized assets and liabilities shall be reported in related disclosures.*

**76-With respect to the content and form of the statement of cash flows, the**

- A. Pronouncements covering the cash flow statement encourage the use of the indirect method.**
- B. Indirect method adjusts ending retained earnings to reconcile it to net cash flows from operations.**
- C. Direct method of reporting cash flows from operating activities includes disclosing the major classes of gross cash receipts and gross cash payments.**

*D. Reconciliation of the net income to net operating cash flow need not be presented when using the direct method.*

*Answer (C) is correct.*

*The FASB encourages use of the direct method of reporting major classes of operating cash receipts and payments, but the indirect method may be used. The minimum disclosures of operating cash flows under the direct method are cash collected from customers, interest and dividends received, other operating cash receipts, cash paid to employees and other suppliers of goods or services, interest paid, income taxes paid, and other operating cash payments.*

*77-Depreciation expense is added to net income under the indirect method of preparing a statement of cash flows in order to*

- A. Report all assets at gross carrying amount.*
- B. Ensure depreciation has been properly reported.*
- C. Reverse noncash charges deducted from net income.*
- D. Calculate net carrying amount.*

*Answer (C) is correct.*

*The indirect method begins with net income and then removes the effects of past deferrals of operating cash receipts and payments, accruals of expected future operating cash receipts and payments, and net income items not affecting operating cash flows (e.g., depreciation).*

*78-All of the following should be classified under the operating section in a statement of cash flows except a*

- A. Decrease in inventory.*
- B. Depreciation expense.*
- C. Decrease in prepaid insurance.*
- D. Purchase of land and building in exchange for a long-term note.*

*Answer (D) is correct.*

*Operating activities include all transactions and other events not classified as investing and financing activities. Operating activities include producing and delivering goods and providing services. Cash flows from such activities are usually included in the determination of net income. However, the purchase of land and a building in exchange for a long-term note is an investing activity. Because this transaction does not affect cash, it is reported in related disclosures of noncash investing and financing activities.*

*79-Which one of the following transactions should be classified as a financing activity in a statement of cash flows?*

- A. Purchase of equipment.*
- B. Purchase of treasury stock.*
- C. Sale of trademarks.*
- D. Payment of interest on a mortgage note.*

*Answer (B) is correct.*

*Financing activities are defined to include the issuance of stock, the payment of dividends, the receipt of donor-restricted resources to be used for long-term purposes, treasury stock transactions (purchases or sales), the issuance of debt, the repayment of amounts borrowed, obtaining and paying for other resources obtained from creditors on long-term credit.*

*80-Kelli Company acquired land by assuming a mortgage for the full acquisition cost. This transaction should be disclosed on Kelli's statement of cash flows as a(n)*

- A. Financing activity.*
- B. Investing activity.*
- C. Operating activity.*
- D. Noncash financing and investing activity.*

*Answer (D) is correct.*

*The exchange of debt for a long-lived asset does not involve a cash flow. It is therefore classified as a noncash financing and investing activity*

**81-Which one of the following transactions should not be classified as a financing activity in the statement of cash flows?**

- A. Issuance of common stock.*
- B. Purchase of treasury stock.*
- C. Payment of dividends.*
- D. Income tax refund.*

*Answer (D) is correct.*

*Financing activities include obtaining resources from owners and providing them with a return on, and a return of, their investment. Cash inflows from financing activities include proceeds from issuing equity instruments. Cash outflows include outlays to reacquire the enterprise's equity instruments, and outlays to pay dividends. However, an income tax refund is an operating activity.*

**82-All of the following should be classified as investing activities in the statement of cash flows except**

- A. Cash outflows to purchase manufacturing equipment.*
- B. Cash inflows from the sale of bonds of other entities.*
- C. Cash outflows to lenders for interest.*
- D. Cash inflows from the sale of a manufacturing plant.*

*Answer (C) is correct.*

*Investing activities include the lending of money and the collecting of those loans; the acquisition, sale, or other disposal of debt or equity instruments; and the acquisition, sale, or other disposition of assets (excluding inventory) that are held for or used in the production of goods or services. Investing activities do not include acquiring and disposing of certain loans or other debt or equity instruments that are acquired specifically for resale. Cash outflows to lenders for interest are cash from an operating, not an investing, activity.*

**83-All of the following should be included in the reconciliation of net income to net operating cash flow in the statement of cash flows except a(n)**

- A. Decrease in inventory.*
- B. Decrease in prepaid insurance.*
- C. Purchase of land and building in exchange for a long-term note.*
- D. Increase in income tax payable.*

*Answer (C) is correct.*

*The purchase of land and a building in exchange for a long-term note is a noncash investing activity that does not affect net income. Thus, it is reported in the related disclosures section of the cash flow statement but is not a reconciling item.*

**84-In preparing a statement of cash flows, an item included in determining net cash flow from operating activities is the**

- A. Amortization of a bond premium.*
- B. Proceeds from the sale of equipment for cash.*
- C. Cash dividends paid.*
- D. Purchase of treasury stock.*

*Answer (A) is correct.*

*The debtor (issuer) on a bond sold at a premium debits or reduces the bond premium for the excess of cash interest paid over interest expense recognized under the effective interest method. The lender (buyer) likewise reduces the bond premium (by a credit) for the excess of cash interest received over interest income recognized. Interest paid (received) is a cash outflow (inflow) from an operating activity. In a reconciliation of net income to net cash flow from operating activities, both the issuer of the bond and the purchaser must make an adjustment for the difference between the cash flow and the effect on net income. Because the issuer's cash outflow exceeded interest expense, it must deduct the difference (premium amortization) from net income in*

performing the reconciliation. The purchaser's cash inflow is greater than interest income, so it must add the difference (premium amortization) to net income to arrive at net cash flow from operating activities.

85-The information reported in the statement of cash flows should help investors, creditors, and others to assess all of the following except the

- A. Amount, timing, and uncertainty of prospective net cash inflows of a firm.
- B. Company's ability to pay dividends and meet obligations.
- C. Company's ability to generate future cash flows.
- D. Management of the firm with respect to the efficient and profitable use of its resources.

Answer (D) is correct.

The statement of cash flows is not designed to provide information with respect to the efficient and profitable use of the firm's resources. Financial reporting provides information about an enterprise's performance during a period when it was under the direction of a particular management but does not directly provide information about that management's performance. Financial reporting does not try to separate the impact of a particular management's performance from the effects of prior management actions, general economic conditions, the supply and demand for an enterprise's inputs and outputs, price changes, and other events.

86-To calculate cash flows using the indirect method, which one of the following items must be added back to net income?

- A. Revenue.
- B. Marketing expense.
- C. Depreciation expense.
- D. Interest income.

Answer (C) is correct.

The indirect method begins with accrual-basis net income or the change in net assets and removes items that did not affect operating cash flow. Depreciation is a non-cash item and thus does not affect the cash flows. This amount must be added back to net income because it decreased net income even though it had no cash effect.

87-The net income for Cypress, Inc., was \$3,000,000 for the year ended December 31. Additional information is as follows:

Depreciation on fixed assets	\$1,500,000
Gain from cash sale of land	200,000
Increase in accounts payable	300,000
Dividends paid on preferred stock	400,000

The net cash provided by operating activities in the statement of cash flows for the year ended December 31 should be

- A. \$4,200,000
- B. \$4,500,000
- C. \$4,600,000
- D. \$4,800,000

Answer (C) is correct.

Net operating cash flow may be determined by adjusting net income. Depreciation is an expense not directly affecting cash flows that should be added back to net income. The increase in accounts payable is added to net income because it indicates that an expense has been recorded but not paid. The gain on the sale of land is an accrual-basis item affecting net income and thus should be subtracted. The dividends paid on preferred stock are cash outflows from financing, not operating, activities and do not require an adjustment. Thus, net cash flow from operations is \$4,600,000 (\$3,000,000 + \$1,500,000 – \$200,000 + \$300,000).

Fact Pattern: Royce Company had the following transactions during the fiscal year ended December 31, Year 2:

- Accounts receivable decreased from \$115,000 on December 31, Year 1, to \$100,000 on December 31, Year 2.
- Royce's board of directors declared dividends on December 31, Year 2, of \$.05 per share on the 2.8 million shares outstanding, payable to shareholders of record on January 31, Year 3. The company did not declare or pay dividends for fiscal Year 1.
- Sold a truck with a net carrying amount of \$7,000 for \$5,000 cash, reporting a loss of \$2,000.
- Paid interest to bondholders of \$780,000.

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- The cash balance was \$106,000 on December 31, Year 1, and \$284,000 on December 31, Year 2.

88-Royce Company uses the direct method to prepare its statement of cash flows at December 31, Year 2. The interest paid to bondholders is reported in the

- A. Financing section, as a use or outflow of cash.
- B. Operating section, as a use or outflow of cash.
- C. Investing section, as a use or outflow of cash.
- D. Debt section, as a use or outflow of cash

Answer (B) is correct.

Payment of interest on debt is considered a cash outflow from an operating activity, although repayment of debt principal is a financing activity.

89-Royce Company uses the indirect method to prepare its Year 2 statement of cash flows. It reports a(n)

- A. Source or inflow of funds of \$5,000 from the sale of the truck in the financing section.
- B. Use or outflow of funds of \$140,000 in the financing section, representing dividends.
- C. Deduction of \$15,000 in the operating section, representing the decrease in year-end accounts receivable.
- D. Addition of \$2,000 in the operating section for the \$2,000 loss on the sale of the truck.

Answer (D) is correct.

The indirect method determines net operating cash flow by adjusting net income. Under the indirect method, the \$5,000 cash inflow from the sale of the truck is shown in the investing section. A \$2,000 loss was recognized and properly deducted to determine net income. This loss, however, did not require the use of cash and should be added to net income in the operating section.

90-The total of cash provided (used) by operating activities plus cash provided (used) by investing activities plus cash provided (used) by financing activities is

- A. Cash provided of \$284,000.
- B. Cash provided of \$178,000.
- C. Cash used of \$582,000.
- D. Equal to net income reported for fiscal year ended December 31, Year 2.

Answer (B) is correct.

The total of cash provided (used) by the three activities (operating, investing, and financing) should equal the increase or decrease in cash for the year. During Year 2, the cash balance increased from \$106,000 to \$284,000. Thus, the sources of cash must have exceeded the uses by \$178,000.

91-The following information was taken from the accounting records of Oak Corporation for the year ended December 31:

Proceeds from issuance of preferred stock F	\$4,000,000
Dividends paid on preferred stock F	400,000
Bonds payable converted to common stock	2,000,000
Payment for purchase of machinery	500,000
Proceeds from sale of plant building	1,200,000
2% stock dividend on common stock	300,000
Gain on sale of plant building	200,000

The net cash flows from investing and financing activities that should be presented on Oak's statement of cash flows for the year ended December 31 are, respectively,

- A. \$700,000 and \$3,600,000.
- B. \$700,000 and \$3,900,000.
- C. \$900,000 and \$3,900,000.
- D. \$900,000 and \$3,600,000.

Answer (A) is **correct**.

The relevant calculations are as follows:

Proceeds from sale of plant building	\$1,200,000
Payment for purchase of machinery	(500,000)
Net cash provided by investing activities	<u>\$ 700,000</u>
Proceeds from issuance of preferred stock	\$4,000,000
Dividends paid on preferred stock	(400,000)
Net cash provided by financing activities	<u>\$3,600,000</u>

92-Zip Company entered into the following transactions during the year:

Purchased stock for \$200,000

Purchased electronic equipment for use on the manufacturing floor for \$300,000

Paid dividends to shareholders of Zip Company in the amount of \$800,000

The amount to be reported in the investing activities section of Zip's statement of cash flows would be

- A. \$200,000
- B. \$500,000
- C. \$800,000
- D. \$1,300,000

Answer (B) is correct.

The statement of cash flows classifies an enterprise's cash flows into three categories. Investing activities typically include the purchase and sale of securities of other entities and the purchase and sale of property, plant, and equipment. Thus, the amount to be reported in the investing activities section of Zip's statement of cash flows is \$500,000 (\$200,000 + \$300,000).

93-When using the statement of cash flows to evaluate a company's continuing solvency, the most important factor to consider is the cash

- A. Balance at the end of the period.
- B. Flows from (used for) operating activities.
- C. Flows from (used for) investing activities.
- D. Flows from (used for) financing activities.

Answer (B) is correct.

Solvency is the ability of an entity to pay its noncurrent debts as they become due. A statement of cash flows provides information about, among other things, an entity's activities in generating cash through operations (operating activities) to (1) repay debt, (2) distribute dividends, or (3) reinvest to maintain or expand operating capacity. Thus, cash flows from operating activities (net operating cash inflows), which are generated by an entity's ongoing major or central activities, are the best indicator of its ability to remain solvent over the long term.

94-Dividends paid to shareholders are shown on the statement of cash flows as

- A. Operating cash inflows.
- B. Operating cash outflows.
- C. Cash flows from investing activities.
- D. Cash flows from financing activities.

Answer (D) is correct.

The payment of dividends is a cash outflow from a financing activity. The receipt of dividends, however, is generally considered a cash inflow from an operating activity.

95-All of the following are classifications on the statement of cash flows except

- A. Operating activities.
- B. Equity activities.
- C. Investing activities.

D. *Financing activities.*

*Answer (B) is correct.*

*The three classifications used on the statement of cash flows are operating activities, investing activities, and financing activities.*

96- *The sale of available-for-sale securities should be accounted for on the statement of cash flows as a(n)*

- A. *Operating activity.*
- B. *Investing activity.*
- C. *Financing activity.*
- D. *Noncash investing and financing activity.*

*Answer (B) is correct.*

*Investing activities include acquiring and disposing of debt or equity instruments.*

97-

Metro, Inc., reported net income of \$150,000 for the current year. Changes occurred in several balance sheet accounts during the current year as follows:

Investment in Videogold, Inc., stock, all of which was acquired in the previous year, carried on the equity basis	\$5,500 increase
Accumulated depreciation, caused by major repair to projection equipment	2,100 decrease
Premium on bonds payable	1,400 decrease
Deferred income tax liability (long-term)	1,800 increase

In Metro's current year cash flow statement, the reported net cash provided by operating activities should be

- ☐ A. \$150,400
- ☐ B. \$148,300
- ☐ C. \$144,900
- ☐ D. \$142,800

*Answer (C) is correct.*

*The increase in the equity-based investment reflects the investor's share of the investee's net income after adjustment for dividends received. Hence, it is a noncash revenue and should be subtracted in the reconciliation of net income to net operating cash inflow. A major repair provides benefits to more than one period and therefore should not be expensed. One method of accounting for a major repair is to charge accumulated depreciation if the useful life of the asset has been extended, with the offsetting credit to cash, a payable, etc. However, the cash outflow, if any, is from an investing activity. The item has no effect on net income and no adjustment is necessary. Amortization of bond premium is a noncash income statement item that reduces accrual-basis expenses and therefore must be subtracted from net income to arrive at net cash flow from operating activities. The increase in the deferred tax liability is a noncash item that reduces net income and should be added in the reconciliation. Accordingly, net cash provided by operations is \$144,900 (\$150,000 – \$5,500 – \$1,400 + \$1,800).*

98- *Hauschka Company reported net income for the year of \$1,050,000. During the year, accounts receivable decreased \$300,000, prepaid expenses increased \$150,000, accounts payable for merchandise decreased \$150,000, and liabilities for other expenses increased \$100,000. Administrative expenses include depreciation expense of \$50,000, and the company reported a loss on the sale of obsolete equipment of \$10,000. Calculate Hauschka's net cash flows from operating activities during the year.*

- A. *\$1,790,000*
- B. *\$1,690,000*
- C. *\$1,210,000*
- D. *\$1,110,000*



Answer (C) is correct.

Net operating cash flow may be determined by adjusting net income. The depreciation expense, decrease in accounts receivable, increase in liabilities, and loss on the sale of obsolete equipment must be added back. The increase in prepaid expense and decrease in accounts payable must be subtracted from net income. Thus, net cash flow from operations is \$1,210,000 (\$1,050,000 net income + \$50,000 depreciation + \$300,000 accounts receivable + \$100,000 liabilities + \$10,000 loss – \$150,000 prepaid expenses – \$150,000 accounts payable).

99-Garnett Company's year-end income statement shows the following:

Revenues	\$5,000,000
Selling and general expenses (including depreciation expense of \$200,000)	3,800,000
Interest expense	50,000
Gain on sale of equipment	40,000
Income tax expense (including deferred tax expense of \$30,000)	320,000

Net income	\$ 870,000
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During the year, Garnett's noncash current assets rose by \$100,000, and current liabilities increased by \$150,000. On its statement of cash flows, Garnett would report cash provided by operating activities of

- A. \$1,080,000
- B. \$1,110,000
- C. \$1,160,000
- D. \$1,190,000

Answer (B) is correct.

Net operating cash flow may be determined by adjusting net income. Net income of \$870,000 is decreased by the increase in current assets of \$100,000, increased by the increase in current liabilities of \$150,000, increased by depreciation expense of \$200,000, decreased by the gain on sale of equipment of \$40,000, and increased by the deferred tax liability. Thus, cash provided by operating activities would be \$1,110,000.

100-An accountant with Nasbo Enterprises, Inc., has gathered the following information to prepare the statement of cash flows for the current year. Net income of \$456,900 includes a deduction of \$45,600 for depreciation expense. The company issued \$300,000 of dividends this year and purchased one new building for \$275,000. The balance sheets from the current period and prior period included the following balances:

	Prior Year	Current Year
Accounts receivable, net	\$ 56,860	\$ 45,300
Accounts payable	12,900	10,745
Inventory	186,700	194,320

Using the indirect method, what is the amount of cash provided by operating activities?

- A. \$202,500
- B. \$405,205
- C. \$504,285
- D. \$521,405

Answer (C) is correct.

Net operating cash flow may be determined by adjusting net income. Depreciation is an expense not directly affecting cash flows that should be added back to net income. The decrease in accounts payable is subtracted from net income because it indicates that an expense has been paid, while the decrease in accounts receivable should be added to net income. The increase in inventory should be subtracted from net income because cash was used to purchase the inventory. The dividends paid on preferred stock are cash outflows from financing, not operating, activities and do not require an adjustment. Thus, net cash flow from operations is \$504,285 (\$456,900 + \$45,600 + \$11,560 – \$2,155 – \$7,620).

101-Which one of the following would result in a decrease in cash flow measured under the indirect method of preparing a statement of cash flows?

- A. Amortization expense.
- B. Decrease in income taxes payable.
- C. Proceeds from the issuance of common stock.
- D. Decrease in inventories.

Answer (B) is correct.

The indirect method reconciles accrual-basis net income to net operating cash flow. A decrease in income taxes payable implies an operating cash outflow not reflected in net income. Thus, the reconciling adjustment is a subtraction from net income. The result is a lower measure of net operating cash flow.

102-A statement of cash flows prepared using the indirect method would have cash activities listed in which one of the following orders?

- A. Financing, investing, operating.
- B. Investing, financing, operating.
- C. Operating, financing, investing.
- D. Operating, investing, financing.

Answer (D) is correct.

A statement of cash flows prepared using either the direct or the indirect method lists the categories of cash flows in the following order: operating, investing, and financing.

103-Which one of the following should be classified as a cash flow from an operating activity on the statement of cash flows?

- A. A decrease in accounts payable during the year.
- B. An increase in cash resulting from the issuance of previously authorized common stock.
- C. The payment of cash for the purchase of additional equipment needed for current production.
- D. The payment of a cash dividend from money arising from current operations.

Answer (A) is correct.

Operating activities are all transactions and other events that are not financing or investing activities. In general, operating activities involve the production and delivery of goods and the provision of services. Their effects normally are reported in earnings. A decrease in accounts payable indicates a cash outflow to the entity's suppliers in payment for goods or services.

104-The most commonly used method for calculating and reporting a company's net cash flow from operating activities on its statement of cash flows is the

- A. Direct method.
- B. Indirect method.
- C. Single-step method.
- D. Multiple-step method.

Answer (B) is correct.

The FASB has expressed a preference for the direct method. However, if the direct method is used, a separate reconciliation based on the indirect method must be provided in a separate schedule. For this reason, most entities use the indirect method. The same net operating cash flow is reported under both methods.

105-The presentation of the major classes of operating cash receipts (such as receipts from customers) minus the major classes of operating cash disbursements (such as cash paid for merchandise) is best described as the

- A. Direct method of calculating net cash provided or used by operating activities.
- B. Cash method of determining income in conformity with generally accepted accounting principles.
- C. Format of the statement of cash flows.
- D. Indirect method of calculating net cash provided or used by operating activities.

*Answer (A) is correct.*

*The direct method converts the accrual-basis amounts in the income statement to the cash basis. It then reports the separate categories of gross cash receipts and disbursements. Net cash flow from operating activities is the difference between total cash receipts and total cash disbursements.*

*106-Larry Mitchell, Bailey Company's controller, is gathering data for the statement of cash flows for the most recent year end. Mitchell is planning to use the direct method to prepare this statement and has made the following list of cash inflows for the period:*

- Collections of \$100,000 for goods sold to customers*
- Securities purchased for investment purposes with an original cost of \$100,000 sold for \$125,000*
- Proceeds from the issuance of additional company stock totaling \$10,000*

*The correct amount to be shown as cash inflows from operating activities is*

- A. \$100,000*
- B. \$135,000*
- C. \$225,000*
- D. \$235,000*

*Answer (A) is correct.*

*Cash flows from operating activities are those generated by the firm's major and ongoing activities. They include cash flows from all activities not classified as investing or financing. Only the \$100,000 of collections on sales to customers qualifies*

*107-During the year, Deltech, Inc., acquired a long-term productive asset for \$5,000 and also borrowed \$10,000 from a local bank. These transactions should be reported on Deltech's statement of cash flows as*

- A. Outflows for investing activities, \$5,000; inflows from financing activities, \$10,000.*
- B. Inflows from investing activities, \$10,000; outflows for financing activities, \$5,000.*
- C. Outflows for operating activities, \$5,000; inflows from financing activities, \$10,000.*
- D. Outflows for financing activities, \$5,000; inflows from investing activities, \$10,000.*

*Answer (A) is correct.*

*The acquisition and disposal of property, plant, equipment, and other productive assets are investing activities. Borrowing money is a financing activity. Deltech's transactions should therefore be reported on its statement of cash flows as a \$5,000 outflow for investing activities and a \$10,000 inflow from financing activities.*

*108-Atwater Company has recorded the following payments for the current period:*

<i>Purchase Trillium stock</i>	<i>\$300,000</i>
<i>Dividends paid to Atwater shareholder</i>	<i>200,000</i>
<i>Repurchase of Atwater Company stock</i>	<i>400,000</i>

*The amount to be shown in the investing activities section of Atwater's statement of cash flows should be*

- A. \$300,000*
- B. \$500,000*
- C. \$700,000*
- D. \$900,000*

*Answer (A) is correct.*

*Financing activities include paying dividends and treasury stock transactions. Investing activities include acquiring and disposing of debt and equity instruments. Thus, the amount to be shown in the investing activities section of Atwater's statement of cash flows is \$300,000.*

*109-Carlson Company has the following payments recorded for the current period:*

<i>Dividends paid to Carlson shareholders</i>	<i>\$150,000</i>
<i>Interest paid on bank loan</i>	<i>250,000</i>
<i>Purchase of equipment</i>	<i>350,000</i>

*The total amount of the above items to be shown in the operating activities section of Carlson's statement of cash flows should be*

- A. \$150,000*

- B. \$250,000
- C. \$350,000
- D. \$750,000

Answer (B) is correct.

Cash flows from operating activities include cash flows from all activities not classified as investing or financing. Their effects normally are reported in earnings. Operating cash flows include the payment and collection of interest, dividends paid are a financing cash outflow, and the purchase of equipment is an investing activity. Thus, the total amount to be reported in the operating activities section of the statement of cash flows is \$250,000.

110-Barber Company has recorded the following payments for the current period:

Interest paid on bank loan	\$300,000
Dividends paid to Barber shareholders	200,000
Repurchase of Barber stock	400,000

The amount to be shown in the financing activities section of Barber's statement of cash flows should be

- A. \$300,000
- B. \$500,000
- C. \$600,000
- D. \$900,000

Answer (C) is correct.

The payment and collection of interest are treated as cash flows from operating activities. Financing activities include paying dividends and treasury stock transactions. Thus, the amount to be reported in the financing activities section of the statement of cash flows is \$600,000 (\$200,000 + \$400,000).

Fact Pattern: Selected financial information for Kristina Company for the year just ended is shown below.

Net income	\$2,000,000
Increase in net accounts receivable	300,000
Decrease in inventory	100,000
Increase in accounts payable	200,000
Depreciation expense	400,000
Gain on the sale of available-for-sale securities	700,000
Cash receivable from the issue of common stock	800,000
Cash paid for dividends	80,000
Cash paid for the acquisition of land	1,500,000
Cash received from the sale of available-for-sale securities	2,800,000

111-Kristina's cash flow from financing activities for the year is

- A. \$(80,000)
- B. \$720,000
- C. \$800,000
- D. \$3,520,000

Answer (A) is correct.

Cash flows from financing activities for the year consist of the \$80,000 outflow for dividends paid. The issue of common stock is a financing activity, but the \$800,000 of proceeds have not yet been received.

112-Kristina's cash flow from investing activities for the year is

- A. \$(1,500,000)
- B. \$1,220,000
- C. \$1,300,000
- D. \$2,800,000

Answer (C) is correct.

Cash flows from investing activities for the year include the \$2,800,000 inflow from the sale of available-for-sale securities and the \$1,500,000 cash outflow for the purchase of land (\$2,800,000 – \$1,500,000 = \$1,300,000 net cash inflow).

113-For the fiscal year just ended, Doran Electronics had the following results:

Net income	\$920,000
Depreciation expense	110,000
Increase in accounts payable	45,000
Increase in net accounts receivable	73,000
Increase in deferred income tax liability	16,000

Doran's net cash flow from operating activities is

- A. \$928,000
- B. \$986,000
- C. \$1,018,000
- D. \$1,074,000

Answer (C) is **correct**.

The following is the net cash flow from operating activities calculated using the indirect method:

Net income	\$ 920,000
Add: increase in accounts payable	45,000
Add: increase in deferred tax liability	16,000
Add: depreciation expense	110,000
Minus: increase in net accounts receivable	(73,000)
Net cash provided by operating activities	<u>\$1,018,000</u>

The adjustment from cost of goods sold (an accrual accounting amount used to calculate net income) to cash paid to suppliers requires two steps: (1) from cost of goods sold to purchases and (2) from purchases to cash paid to suppliers. An increase in inventory is subtracted from net income. It indicates that purchases were greater than cost of goods sold. A decrease in inventory is added to net income. It indicates that purchases were less than cost of goods sold. However, the change in inventory is not given, so it is assumed to be zero. The increase in accounts payable is added to net income. It indicates that cash paid to suppliers was \$45,000 less than purchases. Thus, the net effect of the changes in inventory and accounts payable is that cash paid to suppliers was \$45,000 (\$0 + \$45,000) less than the accrual basis cost of goods sold. The increase in a deferred income tax liability (debit income tax expense, credit deferred liability) is a noncash item. The adjustment is a \$16,000 addition to net income. Depreciation (\$110,000) also is a noncash item that is added to net income. The net accounts receivable balance increased by \$73,000, implying that cash collections were less than sales. If sales, collections, write-offs, and recognition of bad debt expense were the only relevant transactions, \$73,000 should be subtracted from net income. Use of the change in net accounts receivable as a reconciliation adjustment is a short-cut method. It yields the same net adjustment to net income as separately including the effects of the change in gross accounts receivable, bad debt expense (a noncash item resulting in an addition), and bad debt write-offs (reflecting that write-offs did not result in collections).

114-Three years ago, Jameson Company purchased stock in Zebra, Inc., at a cost of \$100,000. This stock was sold for \$150,000 during the current fiscal year. The result of this transaction should be shown in the investing activities section of Jameson's statement of cash flows as

- A. Zero.
- B. \$50,000
- C. \$100,000
- D. \$150,000

Answer (D) is correct.

The statement of cash flows reports the cash effects of transactions. The accrual-basis gain on the stock is not relevant.

Madden Corporation's controller has gathered the following information as a basis for preparing the statement of cash flows. Net income for the current year was \$82,000. During the year, old equipment with a cost of \$60,000 and a net carrying amount of \$53,000 was sold for cash at a gain of \$10,000. New equipment was purchased for \$100,000. Shown below are selected closing balances for last year and the current year.

	Last Year	Current Year
Cash	\$ 39,000	\$ 85,000
Accounts receivable net	43,000	37,000
Inventories	93,000	105,000
Equipment	360,000	400,000
Accumulated depreciation -- equipment	70,000	83,000
Accounts payable	22,000	19,000
Notes payable	100,000	100,000
Common stock	250,000	250,000
Retained earnings	93,000	175,000

Madden's net cash flow from operating activities for the current year is

- A. \$63,000
- B. \$73,000
- C. \$83,000
- D. \$93,000

Answer (C) is **correct**.

The net operating cash flow may be determined by reconciling it with net income.

Net income	\$ 82,000
Add: decrease in receivables	6,000
Add: depreciation expense	20,000
Minus: increase in inventories	(12,000)
Minus: decrease in payables	(3,000)
Minus: gain on sale of equipment	(10,000)
Net cash provided by operating activities	<u>\$ 83,000</u>

An increase in current operating assets and a decrease in current operating liabilities must be subtracted from net income. Therefore, the increase in inventories of \$12,000 and the decrease in accounts payable of \$3,000 must be subtracted from net income.

A decrease in current operating assets and an increase in current operating liabilities must be added to net income. Therefore, the decrease in receivables of \$6,000 must be added to net income. A gain on sale of equipment is a gain whose cash effect is related to investing activities. Thus, the gain on sale of equipment of \$10,000 must be subtracted from net income. The depreciation expense for the year of \$20,000 (\$83,000 ending accumulated depreciation + \$7,000 accumulated depreciation on equipment sold – \$70,000 beginning accumulated depreciation) is a noncash expense included in net income. Thus, it must be added to net income to determine the net cash flow from operating activities.

**Fact Pattern:** Selected financial information for Kristina Company for the year just ended is shown below.

Net income	\$2,000,000
Increase in net accounts receivable	300,000
Decrease in inventory	100,000
Increase in accounts payable	200,000
Depreciation expense	400,000
Gain on the sale of available-for-sale securities	700,000
Cash received from the issue of common stock	800,000
Cash paid for dividends	80,000
Cash paid for the acquisition of land	1,500,000
Cash received from the sale of available-for-sale securities	2,800,000

Assuming the indirect method is used, Kristina's cash flow from operating activities for the year is

- A. \$1,700,000
- B. \$2,000,000
- C. \$2,400,000
- D. \$3,100,000

Answer (A) is **correct**.

The following is the net cash flow from operating activities calculated using the indirect method:

Net income	\$2,000,000
Add: decrease in inventory	100,000
Add: increase in accounts payable	200,000
Add: depreciation expense	400,000
Minus: increase in net accounts receivable	(300,000)
Minus: gain on sale of securities	(700,000)
Net cash provided by operating activities	<u>\$1,700,000</u>

The adjustment from cost of goods sold (an accrual accounting amount used to calculate net income) to cash paid to suppliers requires two steps: (1) from cost of goods sold to purchases and (2) from purchases to cash paid to suppliers. The \$100,000 decrease in inventory is added to net income. It indicates that purchases were \$100,000 less than cost of goods sold. The \$200,000 increase in accounts payable is added to net income. It indicates that cash paid to suppliers was \$200,000 less than purchases. Thus, the net effect of the changes in inventory and accounts payable is that cash paid to suppliers was \$300,000 (\$100,000 + \$200,000) less than the accrual basis cost of goods sold. Depreciation expense (\$400,000) is a noncash item included in net income. Hence, it is subtracted from net income. The net accounts receivable balance increased by \$300,000, implying that cash collections were less than sales. If sales, collections, write-offs, and recognition of bad debt expense were the only relevant transactions, \$300,000 should be subtracted from net income. Use of the change in net accounts receivable as a reconciliation adjustment is a short-cut method. It yields the same net adjustment to net income as separately including the effects of the change in gross accounts receivable, bad debt expense (a noncash item resulting in an addition), and bad debt write-offs (a subtraction to reflect that write-offs did not result in collections). The sale of securities is an investing activity. It also is subtracted from net income.

*1-6: (11) Revenue Recognition -- Revenue Recognition after Delivery*

*117-ABC operates a catering service that specializes in business luncheons for large corporations. ABC requires customers to place their orders 2 weeks in advance of the scheduled events. ABC bills its customers on the 10th day of the month following the date of service and requires that payment be made within 30 days of the billing date. Conceptually, ABC should recognize revenue from its catering services at the date when a*

- A. Customer places an order.*
- B. Luncheon is served.*
- C. Billing is mailed.*
- D. Customer's payment is received.*

*Answer (B) is correct.*

*Revenues should be recognized when (1) realized or realizable and (2) earned. The most common time at which these two conditions are met is when goods are delivered or services are rendered.*

*118-A company provides fertilization, insect control, and disease control services for a variety of trees, plants, and shrubs on a contract basis. For \$50 per month, the company will visit the subscriber's premises and apply appropriate mixtures. If the subscriber has any problems between the regularly scheduled application dates, the company's personnel will promptly make additional service calls to correct the situation. Some subscribers elect to pay for an entire year because the company offers an annual price of \$540 if paid in advance. For a subscriber who pays the annual fee in advance, the company should recognize the related revenue*

- A. When the cash is collected.*
- B. Evenly over the year as the services are performed.*
- C. At the end of the contract year after all of the services have been performed.*
- D. At the end of the fiscal year.*

*Answer (B) is correct.*

*Revenues should be recognized when (1) realized or realizable and (2) earned. The most common time at which these two conditions are met is when goods are delivered or services are rendered. In the situation presented, the performance of the service (monthly spraying) is so significant to creating a sufficient probability of a flow of future economic benefits that it should be the triggering event for revenue recognition.*

*119-On February 1, Year 1, a computer software firm agrees to program a software package. Twelve payments of \$10,000 on the first of each month are to be made, with the first payment March 1, Year 1. The software is accepted by the client June 1, Year 2. How much Year 1 revenue should be recognized?*

- A. \$0*
- B. \$100,000*
- C. \$110,000*
- D. \$120,000*

*Answer (A) is correct.*

*Revenues should be recognized when (1) realized or realizable and (2) earned. Because the software firm has not substantially fulfilled its obligation, the earning process has not been substantially completed in Year 1. Accordingly, a liability should be recognized because the entity has a current obligation arising from a past event that will require an outflow of economic benefits, that is, to deliver the software or to refund the customer's money. Thus, a liability for \$100,000 and revenue of \$0 should be recognized for Year 1.*

*120-An airline should recognize revenue from airline tickets in the period when*

- A. Passenger reservations are booked.*
- B. Passenger reservations are confirmed.*
- C. Tickets are issued.*
- D. Related flights occur.*

*Answer (D) is correct.*

*Revenues should be recognized when (1) realized or realizable and (2) earned. Although the benefits of the service rendered are reliably measurable on the date the reservations are booked, the earning process is not substantially completed until the airline has fulfilled its obligation, that is, when the related flights occur.*



121-A department store sells gift certificates that may be redeemed for merchandise. Each certificate expires 3 years after issuance. The revenue from the gift certificates should be recognized

- A. Evenly over 3 years from the date of issuance.
- B. In the period the certificates are sold.
- C. In the period the certificates expire.
- D. In the period the certificates are redeemed or in the period they expire if they are allowed to lapse.

Answer (D) is correct.

Revenues should be recognized when (1) realized or realizable and (2) earned. These criteria are met when the certificates are redeemed or expire

122-To comply with the matching principle, the cost of labor services of an employee who participates in the manufacturing of a product normally should be charged to the income statement in the period in which the

- A. Work is performed.
- B. Employee is paid.
- C. Product is completed.
- D. Product is sold.

Answer (D) is correct.

The matching principle states that expenses should be recognized in the same period as the revenues that those expenses helped produce. Revenues related to the employee's labor are not recognized until the goods are sold.

123-Revenues of an entity are usually measured by the exchange values of the assets or liabilities involved. Recognition of revenue does not occur until

- A. The revenue is realizable.
- B. The revenue is realized and earned.
- C. Products or services are exchanged for cash or claims to cash.
- D. The entity has substantially accomplished what it agreed to do.

Answer (B) is correct.

According to the FASB's conceptual framework, revenues should be recognized when they are realized or realizable and earned. Revenues are realized when products, merchandise, or other assets are exchanged for cash or claims to cash. Revenues are realizable when related assets received or held are readily convertible to known amounts of cash or claims to cash. Revenues are earned when the entity has substantially accomplished what it must do to be entitled to the benefits represented by the revenues.

124-Robin Gavaskar, who recently founded a company that produces baseball bats and balls, wants to determine her company's policy for revenue recognition. According to the revenue recognition principle, the most appropriate time to recognize revenue would be when

- A. The sale occurs.
- B. Cash is received.
- C. Production is completed.
- D. Quarterly financial statements are prepared.

Answer (A) is correct.

Revenues are normally recognized when they are realized or realizable and earned. Revenues are realized (or realizable) when goods or services have been exchanged for cash or claims to cash (assets readily convertible to cash). Revenues are earned when the earning process is substantially complete, and the entity is entitled to the resulting benefits or revenues. The revenue recognition criteria are ordinarily met at the point of sale (time of delivery of goods or services).

125-For financial statement purposes, the installment method of accounting may be used if the

- A. Collection period extends over more than 12 months.
- B. Installments are due in different years.
- C. Ultimate amount collectible is indeterminate.
- D. Percentage-of-completion method is inappropriate.

Answer (C) is correct.

Profits from sales in the ordinary course of business usually should be recognized at the time of sale unless collection of the sales price is not reasonably assured. When receivables are collected over an extended period and, because of the terms of the transaction or other conditions, no reasonable basis exists for estimating the degree of collectibility, the installment method or the cost-recovery method of accounting may be used.

126-It is proper to recognize revenue prior to the sale of merchandise when

The revenue will be reported as an installment sale.

The revenue will be reported under the cost-recovery method.

A. I only.

B. II only.

C. Both I and II.

D. Neither I nor II.

Answer (D) is correct.

The installment method recognizes income on a sale as the related receivable is collected. Under the cost-recovery method, profit is recognized only after collections exceed the cost of the item sold.

127-

Several of Fox, Inc.'s customers are having cash flow problems. Information pertaining to these customers for the years ended March 31, Year 7 and Year 8 follows:

	3/31/Yr 7	3/31/Yr 8
Sales	\$10,000	\$15,000
Cost of sales	8,000	9,000
Cash collections		
on Year 7 sales	7,000	3,000
on Year 8 sales	--	12,000

If the cost-recovery method is used, what amount would Fox report as gross profit from sales to these customers for the year ended March 31, Year 8?

A. \$2,000

B. \$3,000

C. \$5,000

D. \$15,000

Answer (C) is correct.

The cost-recovery method recognizes profit only after collections exceed the cost of the item sold, that is, when the full cost has been recovered. Subsequent amounts collected are treated entirely as revenue (debit cash and deferred gross profit, credit the receivable and realized gross profit). The sum of collections in excess of costs to be recognized as gross profit is \$5,000  $\{[\$3,000 \text{ Year 8 collections on Year 7 sales} - (\$8,000 \text{ cost} - \$7,000 \text{ Year 7 collections on Year 7 sales})] + (\$12,000 \text{ collections on Year 8 sales} - \$9,000 \text{ cost})\}$

Subunit 7: Revenue Recognition -- Long-Term Construction

128-

Paulson Company uses the percentage-of-completion method to account for long-term construction contracts. The following information relates to a contract that was awarded at a price of \$700,000. The estimated costs were \$500,000, and the contract duration was 3 years.

	Year 1	Year 2	Year 3
Cumulative cost to date	\$300,000	\$390,000	\$530,000
Costs to complete at year end	250,000	130,000	--
Progress billings	325,000	220,000	155,000
Collections on account	300,000	200,000	200,000

Assuming that \$65,000 was recognized as gross profit in Year 1, the amount of gross profit Paulson recognized in Year 2 was

- A. \$35,000
- B. \$70,000
- C. \$135,000
- D. \$170,000

Answer (B) is **correct**.

Determining the annual recognized gross profit requires calculation of the estimated total gross profit.

	Year 1	Year 2
Contract price	<u>\$700,000</u>	<u>\$700,000</u>
Minus: estimated total costs		
Costs to date	\$300,000	\$390,000
Estimated costs to complete	<u>250,000</u>	<u>130,000</u>
Estimated total costs	<u>\$550,000</u>	<u>\$520,000</u>
Estimated total gross profit	<u>\$150,000</u>	<u>\$180,000</u>

The completion percentage for Year 2 is the ratio of costs incurred to date to estimated total costs (\$390,000 ÷ \$520,000 = 75%). The cumulative gross profit recognized at the end of Year 2 is therefore \$135,000 (\$180,000 × 75%). Because \$65,000 was recognized in Year 1, the amount recognized in Year 2 is \$70,000 (\$135,000 – \$65,000).

129-The calculation of the income recognized in the third year of a 5-year construction contract accounted for using the percentage-of-completion method includes the ratio of

- A. Costs incurred in Year 3 to total billings.
- B. Costs incurred in Year 3 to total estimated costs.
- C. Total costs incurred to date to total billings.
- D. Total costs incurred to date to total estimated costs.

Answer (D) is correct.

The percentage-of-completion method recognizes gross profit or revenue based on the ratio of costs to date to estimated total costs. (This relationship is the recommended but not the only basis for determining progress.)

130-

A company appropriately uses the completed-contract method to account for a long-term construction contract. Revenue is recognized when progress billings are

	Recorded	Collected
A.	No	Yes
B.	Yes	Yes
C.	Yes	No
D.	No	No

Answer (D) is correct.

GAAP require that revenue be recognized when it is realized or realizable and earned. Under the completed-contract method, revenue recognition is appropriate only at the completion of the contract. Neither the recording nor the collection of progress billings affects this recognition

131-A building contractor has a fixed-price contract to construct a large building. It is estimated that the building will take 2 years to complete. Progress billings will be sent to the customer at quarterly intervals. Which of the following describes the preferable point for revenue recognition for this contract if the outcome of the contract can be estimated reliably?

- A. After the contract is signed.
- B. As progress is made toward completion of the contract.
- C. As cash is received.
- D. When the contract is completed.

Answer (B) is correct.

Under the percentage-of-completion method, revenues and expenses are recognized based on the stage of completion at the balance sheet date if the outcome of the contract can be estimated reliably. For a fixed-price contract, the outcome can be estimated reliably if (1) total revenue can be measured reliably, (2) it is probable that the economic benefits of the contract will flow to the enterprise, (3) contract costs to complete and stage of completion can be measured reliably, and (4) contract costs can be clearly identified and measured reliably so that actual and estimated costs can be compared

132-How should the balances of progress billings and construction in progress be shown at reporting dates prior to the completion of a long-term contract?

- A. Progress billings as deferred income, construction in progress as a deferred expense.
- B. Progress billings as income, construction in progress as inventory.
- C. Net, as a current asset if debit balance and current liability if credit balance.
- D. Net, as gross profit from construction if credit balance, and loss from construction if debit balance.

Answer (C) is correct.

The difference between construction in progress (costs and recognized gross profit) and progress billings to date must be reported as a current asset if construction in progress exceeds total billings, and as a current liability if billings exceed construction in progress. Separate recognition is required for each project.

133-

During Year 1, Tidal Co. began construction on a project scheduled for completion in Year 3. At December 31, Year 1, an overall loss was anticipated at contract completion. What would be the effect of the project on Year 1 operating income under the percentage-of-completion method and the completed-contract method?

	Percentage-of- Completion	Completed-Contract
A.	No effect	No effect
B.	No effect	Decrease
C.	Decrease	No effect
D.	Decrease	Decrease

Answer (D) is correct.

When the current estimate of total contract costs indicates a loss, an immediate provision for the entire loss should be made regardless of method. Thus, under either method, Year 1 operating income is decreased by the projected loss.

134-

A company began work on a long-term construction contract in Year 1. The contract price was \$3,000,000. Year-end information related to the contract is as follows:

	Year 1	Year 2	Year 3
Estimated total cost	\$2,000,000	\$2,000,000	\$2,000,000
Cost incurred	700,000	900,000	400,000
Billings	800,000	1,200,000	1,000,000
Collections	600,000	1,200,000	1,200,000

Under the percentage-of-completion method, the gross profit to be recognized in Year 1 is

- A. \$(100,000)
- B. \$100,000
- C. \$200,000
- D. \$350,000

Answer (D) is correct.

The percentage-of-completion method recognizes revenue based on the stage of completion of the contract. One typical method for estimating the stage of completion is the calculation of ratio of the contract costs incurred to date to the estimated total costs. The percentage-of-completion at year-end on the cost-to-cost basis is 35% ( $\$700,000 \div \$2,000,000$ ). The gross profit for Year 1 is the anticipated gross profit on the contract times the completion percentage. Thus, profit for Year 1 is \$350,000 [ $(\$3,000,000 - \$2,000,000) \times 35\%$ ].



## **Unit 2 : Measurement, Valuation, and Disclosure: Investments and Short-Term Items**

### ***2.1: Accounts Receivable***

1- The measurement basis most often used to report a long-term payable representing a commitment to pay money at a determinable future date is

- A. Historical cost.
- B. Current cost.
- C. Net realizable value.
- D. Present value of future cash flows.

Answer (D) is correct.

The measurement basis most commonly adopted by entities in preparing their financial statements is historical cost. However, it is usually combined with other measurement bases (attributes). The attribute used to measure a long-term receivable or payable is the present or discounted value of its future cash flows.

2-

Question: 2      Statements of financial position on December 31, Year 1, and December 31, Year 2, are presented below:

	Dec. 31, Year 1	Dec. 31, Year 2
Assets:		
Cash	\$ 50,000	\$ 60,000
Accounts receivable	95,000	89,000
Allowance for uncollectible accounts	(4,000)	(3,000)
Inventory	120,000	140,000
Property, plant, and equipment	295,000	340,000
Accumulated depreciation	(102,000)	(119,000)
Total Assets	<u>\$ 454,000</u>	<u>\$ 507,000</u>
Liabilities and equity:		
Trade accounts payable	\$ 62,000	\$ 49,000
Interest payable	8,000	11,000
Bonds payable	200,000	200,000
Unamortized bond discount	(15,000)	(10,000)
Equity	199,000	257,000
Total liabilities and equity	<u>\$ 454,000</u>	<u>\$ 507,000</u>

Additional information for Year 2:

- 1. Sales revenue was \$338,000.
- 2. \$3,000 of accounts receivable was written off.

Cash collections from customers in Year 2 were

- A. \$341,000
- B. \$338,000
- C. \$344,000
- D. \$335,000

Answer (A) is correct.

Cash collections from customers equals beginning accounts receivable, plus sales revenue, minus accounts written off, minus ending accounts receivable. In Year 2, cash collections from customers were \$341,000 (\$95,000 + \$338,000 – \$3,000 – \$89,000).



3-An analysis of an entity's \$150,000 accounts receivable at year end resulted in a \$5,000 ending balance for its allowance for uncollectible accounts and a bad debt expense of \$2,000. During the past year, recoveries on bad debts previously written off were correctly recorded at \$500. If the beginning balance in the allowance for uncollectible accounts was \$4,700, what was the amount of accounts receivable written off as uncollectible during the year?

- A.\$1,200
- B.\$1,800
- C.\$2,200
- D.\$2,800

Answer (C) is **correct**.

Under the allowance method, uncollectible accounts are written off by a debit to the allowance and a credit to accounts receivable. The \$500 of recovered bad debts is accounted for by a debit to accounts receivable and a credit to the allowance. The \$2,000 bad debt expense is also credited to the allowance. The amount of accounts receivable written off can be calculated as follows:

Beginning allowance	\$4,700
Bad debt expense	2,000
Recoveries	500
Ending allowance	(5,000)
A/R written off	<u>\$2,200</u>

4-

The following information applies to Nichola Manufacturing Company, which has a 6-month operating cycle:

Cash sales	\$100,000
Credit sales during the sixth month with net 30 days terms	150,000
Credit sale during the fifth month with special terms of net 9 months	10,000
Interest earned and accrued on an investment that matures during month 3 of the next cycle	2,000

The total of Nichola's trade accounts receivable at the end of the current cycle is

- A. \$152,000
- B. \$160,000
- C. \$260,000
- D. \$262,000

Answer (B) is correct.

A receivable classified as current on the statement of financial position is expected to be collected within the current operating cycle or 1 year, whichever is longer. The total of the trade accounts receivable at the end of the current cycle is therefore \$160,000 (\$150,000 + \$10,000).

5-

Johnson Company uses the allowance method to account for uncollectible accounts receivable. After recording the estimate of uncollectible accounts expense for the current year, Johnson decided to write off in the current year the \$10,000 account of a customer who had filed for bankruptcy. What effect does this write-off have on the company's current net income and total current assets, respectively?

	Net Income	Total Current Assets
A.	Decrease	Decrease
B.	No effect	Decrease
C.	Decrease	No effect
D.	No effect	No effect



Answer (D) is **correct**.

Johnson uses the allowance method. Thus, when a specific amount is written off, the journal entry is

Allowance for doubtful accounts	\$10,000	
Accounts receivable		\$10,000

The write-off of a bad debt has no effect on expenses, net income, and total current assets.

6-Based on the industry average, Davis Corporation estimates that its bad debts should average 3% of credit sales. The balance in the allowance for uncollectible accounts at the beginning of Year 3 was \$140,000. During Year 3, credit sales totaled \$10,000,000, accounts of \$100,000 were deemed to be uncollectible, and payment was received on a \$20,000 account that had previously been written off as uncollectible. The entry to record bad debt expense at the end of Year 3 would include a credit to the allowance for uncollectible accounts of

- A. \$300,000
- B. \$260,000
- C. \$240,000
- D. \$160,000

Answer (A) is **correct**.

Bad debt expense is based on the income statement approach. It treats bad debt expense as a function of sales on account. Thus, it is projected to be \$300,000 (\$10,000,000 × 3%). The entry to record bad debt expense is

Bad debt expense	\$300,000	
Allowance for doubtful accounts		\$300,000

7-The following information has been compiled by Able Manufacturing Company:

- Sale of company products for the period to customers with net 30-day terms amounting to \$150,000.
- Sale of company products for the period to a customer, supported by a note for \$25,000, with special terms of net 180 days.
- Balance of trade receivables at the end of the last period was \$300,000.
- Collections of open trade receivables during the period was \$200,000.
- Rental income for the period, both earned and accrued but not yet collected, from the Able Employees' Credit Union for use of company facilities was \$2,000.

The open trade receivables balance to be shown on the statement of financial position for the period is

- A. \$250,000
- B. \$252,000
- C. \$275,000
- D. \$277,000

Answer (A) is **correct**.

The open trade receivables balance is calculated as follows:

Previous ending balance	\$300,000	
Add: sales to customers (terms net 30)	150,000	
Minus: collections during period	(200,000)	
Open trade receivables reported	<u>\$250,000</u>	





8-The following information relates to Jay Co.'s accounts receivable for the year just ended:

Accounts receivable, 1/1	\$ 650,000
Credit sales for the year	2,700,000
Sales returns for the year	75,000
Accounts written off during the year	40,000
Collections from customers during the year	2,150,000
Estimated future sales returns at 12/31	50,000
Estimated uncollectible accounts at 12/31	110,000

What amount should Jay report for accounts receivable, before allowances for sales returns and uncollectible accounts, at December 31?

- A.\$1,200,000
- B.\$1,125,000
- C.\$1,085,000
- D.\$925,000

Answer (C) is **correct**.

The ending balance in accounts receivable consists of the \$650,000 beginning debit balance, plus debits for \$2,700,000 of credit sales, minus credits for \$2,150,000 of collections, \$40,000 of accounts written off, and \$75,000 of sales returns.

Accounts Receivable (in 000s)

1/1	\$ 650	\$ 75	Sales returns
Credit sales	2,700	2,150	Collections
		40	Write-offs
12/31	<u>\$1,085</u>		

The \$110,000 of estimated uncollectible receivables and the \$50,000 of estimated sales returns are not relevant because they affect the allowance accounts but not gross accounts receivable.

9-A shoe retailer allows customers to return shoes within 90 days of purchase. The company estimates that 5% of sales will be returned within the 90-day period. During the month, the company has sales of \$200,000 and returns of sales made in prior months of \$5,000. What amount should the company record as net sales revenue for new sales made during the month?

- A.\$185,000
- B.\$190,000
- C.\$195,000
- D.\$200,000

Answer (B) is **correct**.

The company has \$200,000 of sales and estimates that 5% of sales will be returned. Thus, the company will recognize \$10,000 ( $\$200,000 \times 5\%$ ) for sales returns (contra revenue) and for a corresponding allowance for sales returns (contra asset). This amount is subtracted from total sales to find net sales revenue of \$190,000 ( $\$200,000 - \$10,000$ ).



10-

An internal auditor is deriving cash flow data based on an incomplete set of facts. Bad debt expense was \$2,000. Additional data for this period follows:

Credit sales	\$100,000
Gross accounts receivable -- beginning balance	5,000
Allowance for bad debts -- beginning balance	(500)
Accounts receivable written off	1,000
Increase in net accounts receivable (after subtraction of allowance for bad debts)	30,000

How much cash was collected this period on credit sales?

- A. \$64,000
- B. \$68,000
- C. \$68,500
- D. \$70,000

Answer (B) is **correct**.

The beginning balance of gross accounts receivable (A/R) was \$5,000 (debit). Thus, net beginning A/R was \$4,500 (\$5,000 – \$500 credit in the allowance for bad debts). The allowance was credited for the \$2,000 bad debt expense. Accordingly, the ending allowance (credit) was \$1,500 (\$500 – \$1,000 write-off + \$2,000). Given a \$30,000 increase in net A/R, ending net A/R must have been \$34,500 (\$4,500 beginning net A/R + \$30,000), with ending gross A/R of \$36,000 (\$34,500 + \$1,500). Collections were therefore \$68,000 (\$5,000 beginning gross A/R – \$1,000 write-off + \$100,000 credit sales – \$36,000 ending gross A/R).

Gross A/R			
\$ 5,000	Beg. Bal.	\$ 1,000	Write-off
100,000	Cr. Sales	68,000	Collections
<u>\$ 36,000</u>	End. Bal.		

11-Marr Co. had the following sales and accounts receivable balances, prior to any adjustments at year end

Credit sales	\$10,000,000
Accounts receivable	3,000,000
Allowance for uncollectible accounts	50,000

Marr uses 3% of accounts receivable to determine its allowance for uncollectible accounts at year end. By what amount should Marr adjust its allowance for uncollectible accounts at year end?

- A.\$0
- B.\$40,000
- C.\$90,000
- D.\$140,000

Answer (B) is correct.

The entity uses the percentage of accounts receivable method to estimate the allowance. The year-end balance should be \$90,000 (\$3,000,000 A/R × 3%). Hence, the year-end adjustment is \$40,000 (\$90,000 – \$50,000) unadjusted balance.

12-When the allowance method of recognizing uncollectible accounts is used, the entry to record the write-off of a specific account

- A.Decreases both accounts receivable and the allowance for uncollectible accounts.
- B.Decreases accounts receivable and increases the allowance for uncollectible accounts.
- C. Increases the allowance for uncollectible accounts and decreases net income.
- D.Decreases both accounts receivable and net income.



Answer (A) is correct.

When an account receivable is written off, both accounts receivable and the allowance for uncollectible accounts are decreased. If an account previously written off is collected, the account must be reinstated by increasing both accounts receivable and the allowance. The account receivable is then decreased by the amount of cash collected.

13-

Wren Company had the following account balances at December 31:

Accounts receivable	\$ 900,000
Allowance for uncollectible accounts (before any provision for the year uncollectible accounts expense)	16,000
Credit sales for the year	1,750,000

Wren is considering the following methods of estimating uncollectible accounts expense for the year:

- Based on credit sales at 2%
- Based on accounts receivable at 5%

What amount should Wren charge to uncollectible accounts expense under each method?

	Percentage of Credit Sales	Percentage of Accounts Receivable
A.	\$51,000	\$45,000
B.	\$51,000	\$29,000
C.	\$35,000	\$45,000
D.	\$35,000	\$29,000

Answer (D) is correct.

Uncollectible accounts expense is estimated in two ways. One emphasizes asset valuation, while the other emphasizes income measurement. The first is based on an aging of the receivables to determine the balance in the allowance for uncollectible accounts. Bad debt expense is the amount necessary to adjust the allowance account to this estimated balance. The second recognizes bad debt expense as a percentage of sales. The corresponding credit is to the allowance for uncollectible accounts. Under the first method, if uncollectible accounts are estimated to be 5% of gross accounts receivable, the allowance account should have a balance of \$45,000 ( $\$900,000 \times 5\%$ ), and the entry is to debit uncollectible accounts expense and credit the allowance for \$29,000 ( $\$45,000 - \$16,000$  existing balance). Under the second method, bad debt expense is \$35,000 ( $\$1,750,000 \times 2\%$ ).

14-

On March 31, Vale Co. had an unadjusted credit balance of \$1,000 in its allowance for uncollectible accounts. An analysis of Vale's trade accounts receivable at that date revealed the following:

Age	Amount	Estimated Uncollectible
0-30 days	\$60,000	5%
31-60 days	4,000	10%
Over 60 days	2,000	70%

What amount should Vale report as allowance for uncollectible accounts in its March 31 balance sheet?

- A. \$4,800
- B. \$4,000
- C. \$3,800
- D. \$3,000



Answer (A) is correct.

The aging schedule determines the balance in the allowance for uncollectible accounts. Of the accounts that are no more than 30 days old, the amount uncollectible is \$3,000 ( $\$60,000 \times 5\%$ ). Accounts that are 31-60 days old and over 60 days old have estimated uncollectible balances of \$400 ( $\$4,000 \times 10\%$ ) and \$1,400 ( $\$2,000 \times 70\%$ ), respectively. Hence, the amount recorded in the allowance for uncollectible accounts is \$4,800 ( $\$3,000 + \$400 + \$1,400$ ). The \$1,000 balance already in the account is disregarded because the aging schedule determines the balance that should be in the account.

15-

Which method of recording uncollectible accounts expense is consistent with accrual accounting?

	Allowance	Direct Write-Off
A.	Yes	Yes
B.	Yes	No
C.	No	Yes
D.	No	No

Answer (B) is correct.

The allowance method attempts both to match the expense with the related revenue and to determine the NRV of the accounts receivable. This method is acceptable under GAAP. The direct write-off method debits expense and credits accounts receivable at the time uncollectibility is established. This method does not match revenue and expense or state receivables at NRV. It is not acceptable under GAAP.

16-Under the allowance method of recognizing uncollectible accounts, the entry to write-off an uncollectible account

- A. Increases the allowance for uncollectible accounts.
- B. Has no effect on the allowance for uncollectible accounts.
- C. Has no effect on net income.
- D. Decreases net income.

Answer (C) is correct.

The entry to record bad debt expense under the allowance method is to debit bad debt expense and credit the allowance account. When a specific account is then written off, the allowance is debited and accounts receivable credited. Net income is affected when bad debt expense is recognized, not at the time of the write-off. Because accounts receivable and the allowance account are decreased by the same amount, a write-off of an account also has no effect on the net amount of accounts receivable.

17-

The following accounts were abstracted from Roxy Co.'s unadjusted trial balance at December 31:

	Debit	Credit
Accounts receivable	\$1,000,000	
Allowance for uncollectible accounts	8,000	
Net credit sales		\$3,000,000

Roxy estimates that 3% of the gross accounts receivable will become uncollectible. After adjustment at December 31, the allowance for uncollectible accounts should have a credit balance of

- A. \$90,000
- B. \$82,000
- C. \$38,000
- D. \$30,000



Answer (D) is correct.

The allowance for uncollectible accounts at year end should have a credit balance of \$30,000. This amount is equal to the \$1 million of accounts receivable multiplied by the 3% that are estimated to become uncollectible

18-Mill Co.'s allowance for uncollectible accounts was \$100,000 at the end of Year 2 and \$90,000 at the end of Year 1. For the year ended December 31, Year 2, Mill reported bad debt expense of \$16,000 in its income statement. What amount did Mill debit to the appropriate account in Year 2 to write off actual bad debts?

- A.\$6,000
- B.\$10,000
- C.\$16,000
- D.\$26,000

Answer (A) is **correct**.

When uncollectible accounts are written off, a debit is made to the allowance and a credit to accounts receivable. The beginning balance in the allowance account is \$90,000, the ending balance is \$100,000, and the bad debt expense is \$16,000. Because write-offs equal the beginning balance, plus the bad debt expense, minus the ending balance, \$6,000 of accounts must have been written off.

Allowance			
Write-offs	\$6,000	\$ 90,000	12/31/Yr 1
		16,000	Bad debt expense
		<u>\$100,000</u>	12/31/Yr 2



## 2.2: Inventory – Fundamentals

19-DEF is the consignee for 1,000 units of product X for ABC Company. ABC should recognize the revenue from these 1,000 units when

- A. The agreement between DEF and ABC is signed.
- B. ABC ships the goods to DEF.
- C. DEF receives the goods from ABC.
- D. DEF sells the goods and informs ABC of the sale.

Answer (D) is correct.

Under a consignment arrangement, the consignor ships goods to the consignee, who acts as sales agent for the consignor. The goods are in the physical possession of the consignee but remain the property of the consignor and are included in the consignor's inventory. Revenue and the related cost of goods sold from consigned goods are recognized by the consignor only when the merchandise is sold and delivered to the final customer. Accordingly, recognition occurs when notification is received that the consignee has sold the goods.

20-

An entity had the following account balances in the pre-closing trial balance:

Opening inventory	\$100,000
Closing inventory	150,000
Purchases	400,000
Transportation-in	6,000
Purchase discounts	40,000
Purchase allowances	15,000
Returned purchases	5,000

The entity had net purchases for the period of

- A. \$340,000
- B. \$346,000
- C. \$370,000
- D. \$376,000

Answer (B) is correct.

Purchase discounts, allowances, and returns are subtractions from purchases because they are reductions of cost. Transportation-in is an addition because it increases cost. Thus, net purchases equals \$346,000 ( $\$400,000 + \$6,000 - \$40,000 - \$15,000 - \$5,000$ )

21-A physical inventory count showed an entity had inventory costing \$1,000,000 on hand at December 31, Year 1. Excluded from this amount were the following:

- Goods costing \$82,000, shipped to a customer free on board (FOB) shipping point on December 28, Year 1. They were expected to be received by the customer on January 4, Year 2.
  - Goods costing \$122,000, shipped to a customer free on board (FOB) destination December 30, Year 1. They were expected to be received by the customer on January 5, Year 2.
- Compute the correct ending inventory to be reported on the shipper's statement of financial position at December 31, Year 1.
- A. \$1,000,000
  - B. \$1,082,000
  - C. \$1,122,000
  - D. \$1,204,000



Answer (C) is correct.

The goods shipped FOB shipping point should be counted in the buyer's, not the seller's, inventory because title and risk of loss pass at the time and place of shipment. These goods were properly excluded from ending inventory. The goods shipped FOB destination were improperly excluded from the seller's ending inventory. The title and risk of loss did not pass until the time and place where the goods reached their destination and were duly tendered. Thus, the correct ending inventory is \$1,122,000 (\$1,000,000 beginning balance + \$122,000 goods shipped FOB destination)

22-

The following selected data from statements of financial position on December 31, Year 1, and December 31, Year 2, are presented below:

	12/31/Year 1	12/31/Year 2
Inventory	\$120,000	\$140,000
Trade accounts payable	62,000	49,000

Additional information for Year 2:

1. Cash payments to suppliers of merchandise were \$180,000.

Cost of goods sold in Year 2 was

- A. \$147,000
- B. \$160,000
- C. \$167,000
- D. \$180,000

Answer (A) is **correct**.

Cost of goods sold equals beginning inventory, plus purchases, minus ending inventory. To determine cost of goods sold, purchases must be calculated. Purchases equal \$167,000 (\$49,000 ending accounts payable + \$180,000 payments to suppliers – \$62,000 beginning accounts payable). Thus, cost of goods sold equals \$147,000 (\$120,000 beginning inventory + \$167,000 purchases – \$140,000 ending inventory).

23-

An entity with a December 31 year end purchased \$2,000 of inventory on account. The seller was responsible for delivery to the shipping point, with freight of \$50 paid at destination by the buyer. The invoice date was December 27, Year 1, and the goods arrived on January 3, Year 2.

Now assume the terms required the seller to deliver to the destination instead of the shipping point. What is the correct amount of inventory and freight-in relating to this purchase on the Year 1 financial statements?

	Inventory	Freight-In
A.	\$0	\$0
B.	\$2,050	\$0
C.	\$0	\$50
D.	\$2,000	\$50

Answer (A) is **correct**.

Title and risk of loss passed to the buyer at the destination, and the seller incurred the expense of delivery to that point. The goods did not arrive until after year end, so they should not be included in Year 1 inventory. Freight-in should also not be recorded until Year 2





24-

A retail entity maintains a markup of 25% based on cost. The entity has the following information for the current year:

Purchases of merchandise	\$690,000
Freight-in on purchases	25,000
Sales	900,000
Ending inventory	80,000

Beginning inventory was

- A. \$40,000
- B. \$85,000
- C. \$110,000
- D. \$265,000

Answer (B) is **correct**.

Cost of goods sold for a period equals beginning inventory, plus purchases, plus freight-in, minus ending inventory. Given that sales reflect 125% of cost, cost of goods sold must equal \$720,000 (\$900,000 sales ÷ 1.25). Consequently, the beginning inventory must have been \$85,000 (\$720,000 COGS + \$80,000 EI – \$690,000 purchases – \$25,000 freight-in).

**Fact Pattern:** An entity had the following opening and closing inventory balances during the current year:

	1/1	12/31
Finished goods	\$ 90,000	\$260,000
Raw materials	105,000	130,000
Work-in-progress	220,000	175,000

The following transactions and events occurred during the current year:

- \$300,000 of raw materials were purchased, of which \$20,000 were returned because of defects.
- \$600,000 of direct labor costs were incurred.
- \$750,000 of production overhead costs were incurred.

25-If the entity's raw materials inventory as of December 31 of the current year (ending inventory) was miscounted and the true figure was higher than \$130,000, one effect on the year-end financial statements would be that

- A. Profit is overstated.
- B. Cost of goods sold is overstated.
- C. Working capital is overstated.
- D. Cost of goods produced is understated.

Answer (B) is **correct**.

If the ending inventory of raw materials is understated, raw materials used is overstated, cost of goods produced is overstated, and cost of goods sold is overstated

26-

The following information is available for an entity for the quarter ended March 31, of the current year:

Merchandise inventory, as of	
January 1 of the current year	\$ 30,000
Sales	200,000
Purchases	190,000

The gross profit margin is normally 20% of sales. What is the estimated cost of the merchandise inventory at March 31, of the current year?

- A. \$20,000
- B. \$40,000
- C. \$60,000
- D. \$180,000

Answer (C) is **correct**.

Using the gross profit method, cost of goods sold for the quarter is estimated to be \$160,000 [\$200,000 sales × (1.0 – 0.2)]. Goods available for sale was \$220,000 (\$30,000 beginning inventory + \$190,000 purchases). Estimated ending inventory is therefore \$60,000 (\$220,000 goods available for sale – \$160,000 estimated cost of goods sold).





27-An internal auditor performs an analytical procedure to compare the gross margins of various divisional operations with those of other divisions and with the individual division's performance in previous years. The internal auditor notes a significant increase in the gross margin at one division. The internal auditor does some preliminary investigation and also notes that there were no changes in products, production methods, or divisional management during the year. The most likely cause of the increase in gross margin is

- A. An increase in the number of competitors selling similar products.
- B. A decrease in the number of suppliers of the material used in manufacturing the product.
- C. An overstatement of year-end inventory.
- D. An understatement of year-end accounts receivable.

Answer (C) is correct.

An overstatement of year-end inventory results in an understatement of cost of goods sold, which overstates gross margin

28-If certain goods owned by an entity were not recorded as a purchase and were not counted in ending inventory, in error, then

- A. Cost of goods sold for the period will be understated.
- B. Cost of goods sold for the period will be overstated.
- C. Net income for the period will be understated.
- D. There will be no effect on cost of goods sold or profit for the period.

Answer (D) is **correct**.

The effects of the errors on cost of goods sold are offsetting. Purchases, which increase cost of goods sold, and ending inventory, which decreases cost of goods sold, are understated by the same amount. Neither cost of goods sold nor net income is affected.

29-

What is the cost of ending inventory given the following factors?

Beginning inventory	\$ 5,000
Total production costs	60,000
Cost of goods sold	55,000
Direct labor	40,000

- A. \$5,000
- B. \$10,000
- C. \$45,000
- D. \$50,000

Answer (B) is **correct**.

Beginning inventory, plus purchases (or other inventory additions), minus cost of goods sold, equals ending inventory. Thus, ending inventory equals \$10,000 (\$5,000 + \$60,000 – \$55,000). Direct labor is included in total production costs.

30-Holly Company's inventory is overstated at December 31 of this year. The result will be

- A. Understated income this year.
- B. Understated retained earnings this year.
- C. Understated retained earnings next year.
- D. Understated income next year.

Answer (D) is **correct**.

Cost of goods sold equals beginning finished goods, plus cost of goods manufactured for a manufacturer or purchases for a retailer, minus ending finished goods. Overstated ending inventory therefore results in understated cost of goods sold, overstated net income, and overstated retained earnings in the period of the error. When these errors reverse in the following period, beginning inventory and cost of goods sold will be overstated, and net income will be understated. Retained earnings will be correct.



31-Which one of the following errors will result in the overstatement of net income?

- A. Overstatement of beginning inventory.
- B. Overstatement of ending inventory.
- C. Overstatement of goodwill amortization.
- D. Overstatement of bad debt expense.

Answer (B) is **correct**.

Cost of goods sold equals beginning finished goods, plus cost of goods manufactured for a manufacturer or purchases for a retailer, minus ending finished goods. Overstated ending inventory therefore results in understated cost of goods sold, overstated net income, and overstated retained earnings in the period of the error

32-

The following information applies to the income statement of Addison Company:

Gross sales	\$1,000,000
Net sales	900,000
Freight-in	10,000
Ending inventory	200,000
Gross profit margin	40%

Addison's cost of goods available for sale is

- A. \$550,000
- B. \$560,000
- C. \$740,000
- D. \$800,000

Answer (C) is **correct**.

The gross profit (gross margin) method calculates ending inventory at a given time by subtracting an estimated cost of goods sold from the sum of beginning inventory and purchases (or cost of goods manufactured). The estimated cost of goods sold equals sales minus the gross profit. The gross profit equals sales multiplied by the gross profit percentage, an amount ordinarily determined on a historical basis. Given that the gross margin percentage is 40% of net sales, cost of goods sold must be 60% of net sales, or \$540,000 ( $\$900,000 \times 60\%$ ). Goods available for sale equals cost of goods sold plus ending inventory ( $\$540,000 + \$200,000 = \$740,000$ ).

**2.3: Inventory -- Cost Flow --**

33-

An entity started in Year 1 with 200 scented candles on hand at a cost of \$3.50 each. These candles sell for \$7.00 each. The following schedule represents the purchases and sales of candles during Year 1:

Transaction Number	Quantity Purchased	Unit Cost	Quantity Sold
1	---	---	150
2	250	\$3.30	---
3	---	---	100
4	200	3.10	---
5	---	---	200
6	350	3.00	---
7	---	---	300

If the entity uses periodic FIFO inventory pricing, the gross profit for Year 1 would be

- A. \$2,755
- B. \$2,805
- C. \$2,854
- D. \$2,920

Answer (B) is **correct**.

The FIFO method assumes that the first goods purchased are the first goods sold and that ending inventory consists of the latest purchases. Moreover, whether the inventory system is periodic or perpetual does not affect FIFO measurement. The cost of goods sold is \$2,445 {beginning inventory (200 units × \$3.50) + purchases [(250 units × \$3.30) + (200 units × \$3.10) + (350 units × \$3.00)] – ending inventory (250 units × \$3.00)}. Thus, the gross profit for Year 1 using FIFO is \$2,805 [sales (750 units × \$7.00) – cost of goods sold of \$2,445].

34-The cost of materials has risen steadily over the year. Which of the following methods of estimating the ending balance of the materials inventory account will result in the highest profit, assuming all other variables remain constant?

- A. Last-in, first-out (LIFO).
- B. First-in, first-out (FIFO).
- C. Weighted average.
- D. Specific identification.

Answer (B) is **correct**.

Profit will be higher when cost of goods sold is lower, other factors held constant. Cost of goods sold equals beginning inventory, plus purchases, minus ending inventory. Accordingly, cost of goods sold will be lowest when the ending inventory is highest. In an inflationary environment, ending inventory is highest under FIFO because the older, less expensive items are deemed to have been sold, leaving the more expensive items in the ending inventory.

35-When a right of return exists, an entity may recognize revenue from a sale of goods at the time of sale only if

- A. The amount of future returns can be reliably estimated.
- B. The seller retains the risks and rewards of ownership.
- C. The buyer resells the goods.
- D. The seller believes returns will not be material.

Answer (A) is **correct**.

One condition for recognition of revenue from the sale of goods is the transfer of the significant risks and rewards of ownership. Retention of significant risk may occur when, for example, the buyer may rescind the purchase for a reason stipulated in the contract, and the buyer is uncertain about the probability of return. However, if the entity can reliably estimate future returns and recognizes a liability for returns based on experience and other pertinent information, revenue may be recognized at the time of sale if the other conditions for revenue recognition also are met.



**Fact Pattern:** Illustrated below is a perpetual inventory card for the current year.

Date	Units Purchased	Units Sold	Units Balance
January 1			0
January 12	1,000 @ \$2.00		1,000
March 15		300	700
May 5	500 @ \$2.20		1,200
July 8		500	700
November 24	1,000 @ \$1.65		1,700

Additional information:

- The entity had no opening inventory.
- The items sold on March 15 were purchased on January 12.
- The items sold on July 8 were purchased on May 5.

36-The ending inventory balance under the first-in, first-out (FIFO) method of inventory valuation is

- A. \$3,050
- B. \$3,150
- C. \$3,230
- D. \$3,430

Answer (B) is **correct**.

Under the FIFO method, the 1,700 units of ending inventory are valued at the most recent prices. Ending inventory is assumed to include 1,000 units purchased November 24, 500 units purchased May 5, and 200 units purchased January 12. Hence, the ending inventory is \$3,150  $[(1,000 \times \$1.65) + (500 \times \$2.20) + (200 \times \$2.00)]$ .

37-The cost of goods sold under the specific identification method of inventory valuation is

- A. \$1,320
- B. \$1,520
- C. \$1,600
- D. \$1,700

Answer (D) is **correct**.

Of the 800 units sold during the period, the 300 units sold on March 15 were purchased on January 12 at a cost of \$2.00 per unit. The remaining 500 units were purchased on May 5 at a cost of \$2.20 per unit. The cost of goods sold under the specific identification method is therefore \$1,700  $[(300 \text{ units} \times \$2.00) + (500 \text{ units} \times \$2.20)]$ .

38-

A merchandising company had the following inventory related transactions in its first year of operations:

Date	Purchases in Units	Sales in Units	Balance in Units
Jan. 1	10,000 @ \$5		10,000
March 1	6,000 @ \$6		16,000
May 1		3,000	13,000
July 1	8,000 @ \$6.25		21,000
Sept. 1		12,000	9,000
Nov. 1	5,000 @ \$7		14,000
Dec. 1		2,000	12,000

If the company uses the first-in-first-out (FIFO) method of inventory valuation, its ending inventory balance (rounded) will be

- A. \$62,000
- B. \$70,759
- C. \$78,750
- D. \$84,000

Answer (C) is **correct**.

The first-in-first-out (FIFO) method treats the oldest units as being sold first and the newest units remain in inventory. Because the company has 12,000 units remaining, ending inventory equals \$78,750  $[(5,000 \times \$7) + (7,000 \times \$6.25)]$ .



39-

An entity has 8,000 units in inventory on January 1, valued at 10 per unit. During the year, the entity sold 25,000 units and purchased inventory as follows:

Date	Quantity Purchased	Unit Price
April 1	15,000 units	\$ 8
July 1	10,000 units	9
October 1	12,500 units	10

If the entity uses the weighted-average method of inventory valuation, cost of goods sold for the period will be

- A. \$186,978
- B. \$197,000
- C. \$228,023
- D. \$235,000

Answer (C) is **correct**.

Under the weighted-average method, the weighted-average cost per unit is multiplied by the number of units sold to determine the cost of goods sold for the period. The total units available for sale equaled 45,500 (8,000 + 15,000 + 10,000 + 12,500). The total cost of all units available for sale was \$415,000 [(8,000 × \$10) + (15,000 × \$8) + (10,000 × \$9) + (12,500 × \$10)]. Thus, the weighted-average cost per unit of inventory was \$9.1209 (\$415,000 ÷ 45,500), and cost of goods sold was \$228,023 (25,000 × \$9.1209).

40-

On January 1, a company has no opening inventory balance. The following purchases are made during the year:

	Units Purchased	Unit Cost
January 1	5,000	\$10.00
April 1	5,000	9.00
July 1	5,000	8.00
October 1	5,000	7.50

There are 10,000 units in inventory on December 31.

If the company uses the first-in, first-out (FIFO) method of inventory valuation, the ending inventory balance will be

- A. \$77,500
- B. \$85,000
- C. \$86,250
- D. \$95,000

Answer (A) is **correct**.

Under first-in, first-out (FIFO) inventory valuation, the 10,000 units in ending inventory are assumed to have been the most recent items purchased. The cost of the most recent 10,000 units purchased is: (5,000 units × \$7.50) + (5,000 units × \$8) = \$77,500.

41-

Which inventory pricing method generally approximates current cost for each of the following?

	Ending Inventory	Cost of Goods Sold
A.	FIFO	FIFO
B.	LIFO	FIFO
C.	FIFO	LIFO
D.	LIFO	LIFO

Answer (C) is **correct**.

FIFO assigns the most recent acquisition costs to ending inventory and the earliest acquisition costs to cost of goods sold. LIFO assigns the earliest acquisition costs to ending inventory (it is permitted by U.S. GAAP but not by IFRS). Thus, FIFO approximates current cost for ending inventory, and LIFO approximates current cost of goods sold.



42-Which of the following changes in accounting policies resulting from a significant change in the expected pattern of economic benefit will increase profit?

- A. A change from FIFO to LIFO inventory valuation when costs are rising.
- B. A change from FIFO to weighted-average inventory valuation when costs are falling.
- C. A change from accelerated to straight-line depreciation in the later years of the depreciable lives of the assets.
- D. A change from straight-line to accelerated depreciation in the early years of the depreciable lives of the assets.

Answer (B) is **correct**.

In a period of falling costs, FIFO results in higher cost of goods sold than the weighted-average method. FIFO includes the higher, earlier costs in cost of goods sold, and the weighted-average method averages the later, lower costs with the higher, earlier costs. Thus, a change from FIFO to weighted-average costing reduces cost of goods sold and increases reported profit.

43-

On January 1, a company has no opening inventory balance. The following purchases are made during the year:

	Units Purchased	Unit Cost
January 1	5,000	\$10.00
April 1	5,000	9.00
July 1	5,000	8.00
October 1	5,000	7.50

There are 10,000 units in inventory on December 31.

If the company uses the last-in, first-out (LIFO) method of inventory valuation, cost of goods sold for the year will be:

- A. \$77,500
- B. \$86,250
- C. \$87,500
- D. \$95,000

Answer (A) is **correct**.

A total of 20,000 units was available for sale (0 beginning inventory + 20,000 purchased during year). Since 10,000 remain in ending inventory, 10,000 were sold (20,000 available – 10,000 remaining). Under the LIFO method, the units sold were those purchased in July and October. Cost of goods sold for the year thus equaled \$77,500 [(5,000 units x \$8.00 July) + (5,000 units x \$7.50 October)].

44-The advantage of the last-in, first-out inventory method is based on the assumption that

- A. The most recently incurred costs should be allocated to the cost of goods sold.
- B. Costs should be charged to revenue in the order in which they are incurred.
- C. Costs should be charged to cost of goods sold at average cost.
- D. Current costs should be based on representative or normal conditions of efficiency and volume of operations.

Answer (A) is **correct**.

Under the LIFO method, the most recent costs of acquiring or producing inventory are expensed as part of cost of goods sold. Given inflation, this method results in the highest cost of goods.



45-Which inventory cost flow method is prohibited according to IFRS?

- A. First-in, first-out (FIFO) method.
- B. Specific identification method.
- C. Weighted average cost method.
- D. Last-in, first-out (LIFO) method.

Answer (D) is **correct**.

The last-in, first-out (LIFO) method is prohibited by IFRS. This method is based on the assumption that the newest items are sold first. Its effect is to include current prices in cost of goods sold. But the LIFO assumption ordinarily does not match actual inventory use.

46-The inventory method yielding the same inventory measurement and cost of goods sold whether a perpetual or periodic system is used is

- A. Average cost.
- B. First-in, first-out.
- C. Last-in, first-out.
- D. Either first-in, first-out or last-in, first-out.

Answer (B) is correct.

A perpetual inventory system will result in the same dollar amount of ending inventory as a periodic inventory system assuming a FIFO cost flow. Under both perpetual and periodic systems, the same units are deemed to be in ending inventory.

47-In a period of rising prices, which one of the following inventory methods usually provides the **best** matching of expenses against revenues?

- A. Weighted average.
- B. First-in, first-out.
- C. Last-in, first-out.
- D. Specific identification.

Answer (C) is correct.

A significant advantage of the LIFO method is its matching of current revenues with the most recent product costs. When prices are rising (which is most of the time), the most recent costs are the highest costs, resulting in higher cost of goods sold and lower net income. The lower net income means lower taxes.

48-Which one of the following actions would result in a decrease in income?

- A. Liquidating last-in, first-out layers of inventory when prices have been increasing.
- B. Changing from first-in, first-out to last-in, first-out inventory method when prices are decreasing.
- C. Accelerating purchases at the end of the year when using last-in, first-out inventory method in times of rising prices.
- D. Changing the number of last-in, first-out pools.

Answer (C) is **correct**.

Under the LIFO method, the most recent costs of acquiring or producing inventory are expensed as part of cost of goods sold. In a time of rising prices, charging newer, higher-priced goods against current revenues decreases income.





49-In periods of rising costs, which one of the following inventory cash flow assumptions will result in higher cost of sales?

- A. First-in, first-out.
- B. Last-in, first-out.
- C. Weighted average.
- D. Moving average.

Answer (B) is correct.

A significant advantage of the LIFO method is its matching of current revenues with the most recent product costs. When prices are rising (which is most of the time), the most recent costs are the highest costs, resulting in higher cost of goods sold and lower net income. The lower net income means lower taxes.

**Fact Pattern:** During January, Metro Co., which maintains a perpetual inventory system, recorded the following information pertaining to its inventory:

	Units	Unit Cost	Total Cost	Units On Hand
Balance on 1/1	1,000	\$1	\$1,000	1,000
Purchased on 1/7	600	3	1,800	1,600
Sold on 1/20	900			700
Purchased on 1/25	400	5	2,000	1,100

50-Under the moving-average method, what amount should Metro report as inventory at January 31?

- A. \$2,640
- B. \$3,225
- C. \$3,300
- D. \$3,900

Answer (B) is **correct**.

The moving-average system is only applicable to perpetual inventories. It requires that a new weighted average be computed after every purchase. This moving average is based on remaining inventory held and the new inventory purchased. Based on the calculations below, the moving-average cost per unit for the 1/20 sale is \$1.75, and the cost of goods sold (COGS) for January is \$1,575 (900 units sold × \$1.75). Thus, ending inventory is \$3,225 (\$1,000 beginning balance + \$1,800 purchase on 1/7 – \$1,575 COGS on 1/20 + \$2,000 purchase on 1/25).

	Units	Moving-Average Cost/Unit	Total Cost
Balance 1/1	1,000	\$1.00	\$1,000
Purchase 1/7	600	3.00	1,800
	<u>1,600</u>	<u>\$1.75</u>	<u>\$2,800</u>

51-

The weighted average for the year inventory cost flow method is applicable to which of the following inventory systems?

	Periodic	Perpetual
A.	Yes	Yes
B.	Yes	No
C.	No	Yes
D.	No	No

Answer (B) is **correct**.

The weighted-average method determines an average cost only once (at the end of the period) and is therefore applicable only to a periodic system. In contrast, the moving-average method requires determination of a new weighted-average cost after each purchase and thus applies only to a perpetual system.



**2.4: Inventory Measurement in**

52-In accounting for inventories, generally accepted accounting principles require departure from the historical cost principle when the utility of inventory has fallen below cost. This rule is known as the “lower-of-cost-or-market” rule. The term “market” as defined here means

- A. Original cost minus allowance for obsolescence.
- B. Original cost plus normal profit margin.
- C. Replacement cost of the inventory.
- D. Original cost minus cost to dispose.

Answer (C) is **correct**.

Market is the replacement cost of the inventory as determined in the market in which the entity buys its inventory, not the market in which it sells to customers. Market is limited to a ceiling amount equal to net realizable value and a floor amount equal to net realizable value minus a normal profit margin.

**Fact Pattern:** The data below concern items in Stockholm Co.’s inventory.

Per Unit	Gear	Stuff	Wickets
Historical cost	\$190.00	\$106.00	\$53.00
Selling price	217.00	145.00	73.75
Cost to complete and sell	19.00	8.00	2.50
Current replacement cost	203.00	105.00	51.00
Normal profit margin	32.00	29.00	21.25

53-Under IFRS, what amount should Stockholm Co. compare with historical cost to measure the amount at which the wickets should be measured?

- A.\$51.00
- B.\$50.00
- C.\$71.25
- D.\$73.75

Answer (C) is **correct**.

Inventory is recorded at cost. However, inventory must be written down if its utility is no longer as great as its cost. To make this determination under IFRS, historical cost is compared with the inventory’s net realizable value (NRV). NRV is the estimated selling price in the ordinary course of business minus estimated costs of completion and sale. NRV for the wickets is \$71.25 (\$73.75 selling price – \$2.50 estimated costs of completion and sale).

54-

An entity that prepares its financial statements using IFRS reported the following selected per-unit data relating to work-in-process:

Selling price	\$100
Completion costs	10
Historical cost	91
Replacement cost	108
Normal gross profit	20
Selling cost	5

In comparison with historical cost, what will be the per-unit effect on gross profit of measuring ending inventory?

- A. No effect.
- B. Reduction of \$6.
- C. Reduction of \$26.
- D. Increase of \$5.



Answer (B) is correct.

Under IFRS, inventories are measured subsequent to acquisition at the lower of cost or net realizable value (NRV). NRV equals selling price minus estimated completion and selling costs. Given that historical cost is \$91 and NRV is \$85 (\$100 selling price – \$10 completion cost – \$5 selling cost), the effect on per-unit gross profit is a reduction of \$6. This amount is expensed.

55-

The following data apply to a unit of inventory:

Selling price	\$22
Selling cost	2
Normal profit margin	5
Replacement cost	10

Using the lower of cost or market (LCM) method of measuring inventory, what is the market amount for this unit of inventory?

- A. \$10.00
- B. \$15.00
- C. \$17.50
- D. \$20.00

Answer (B) is **correct**.

Under the LCM method, market is current replacement cost subject to a maximum (ceiling) equal to net realizable value and a minimum (floor) equal to net realizable value minus a normal profit margin. NRV equals selling price minus costs of completion and disposal. Thus, the maximum market amount is the \$20 NRV (\$22 selling price – \$2 selling cost), and the minimum is \$15 (\$20 NRV – \$5 normal profit margin). Because the minimum exceeds the \$10 replacement cost, it is the market amount.

56-Based on a physical inventory taken on December 31, Chewy Co. determined its chocolate inventory on a FIFO basis at \$26,000 with a replacement cost of \$20,000. Chewy estimated that, after further processing costs of \$12,000, the chocolate could be sold as finished candy bars for \$40,000. Chewy's normal profit margin is 10% of sales. Under the lower-of-cost-or-market rule, what amount should Chewy report as chocolate inventory in its December 31 balance sheet?

- A.\$28,000
- B.\$26,000
- C.\$24,000
- D.\$20,000

Answer (C) is **correct**.

Market equals current replacement cost subject to maximum and minimum values. The maximum is NRV, and the minimum is NRV minus normal profit. When replacement cost is within this range, it is used as market. Cost is given as \$26,000. NRV is \$28,000 (\$40,000 selling price – \$12,000 additional processing costs), and NRV minus a normal profit equals \$24,000 [\$28,000 – (\$40,000 × 10%)]. Because the lowest amount in the range (\$24,000) exceeds replacement cost (\$20,000), it is used as market. Because market value (\$24,000) is less than cost (\$26,000), it is also the inventory amount.

57-The lower-of-cost-or-market rule for inventories may be applied to total inventory, to groups of similar items, or to each item. Which application generally results in the lowest inventory amount?

- A.All applications result in the same amount.
- B.Total inventory.
- C.Groups of similar items.
- D.Separately to each item.



Answer (D) is correct.

Applying the LCM rule to each item of inventory produces the lowest amount for each item and therefore the lowest and most conservative measurement for the total inventory. The reason is that aggregating items results in the inclusion of some items at amounts greater than LCM. For example, if item A (cost \$2, market \$1) and item B (cost \$3, market \$4) are aggregated for LCM purposes, the inventory measurement is \$5. If the rule is applied separately to A and B, the LCM measurement is \$4.

58-Under the lower-of-cost-or-market method, the replacement cost of an inventory item would be used as the designated market value

- A. When it is below the net realizable value less the normal profit margin.
- B. When it is below the net realizable value and above the net realizable value less the normal profit margin.
- C. When it is above the net realizable value.
- D. Regardless of net realizable value.

Answer (B) is **correct**.

Market is current replacement cost subject to maximum and minimum values. The maximum is net realizable value, and the minimum is net realizable value less normal profit. When replacement cost is within this range, it is used as the market amount

59-

Ward Distribution Company has determined its December 31 inventory on a FIFO basis at \$200,000. Information pertaining to that inventory follows:

Estimated selling price	\$204,000
Estimated cost of disposal	10,000
Normal profit margin	30,000
Current replacement cost	180,000

Ward records losses that result from applying the lower-of-cost-or-market rule. At December 31, the loss that Ward should recognize is

- A. \$0
- B. \$6,000
- C. \$14,000
- D. \$20,000

Answer (D) is **correct**.

As indicated below, the \$180,000 replacement cost falls between the \$194,000 ceiling and the \$164,000 floor. Hence, it will be used as market in the LCM determination. Because the \$180,000 market value is \$20,000 lower than the \$200,000 historical cost, the inventory should be valued at \$180,000 and a \$20,000 loss recognized.

NRV (\$204,000 – \$10,000)	\$194,000
Replacement cost	\$180,000
NRV – Normal profit (\$194,000 – \$30,000)	\$164,000

60-The replacement cost of an inventory item is below the net realizable value and above the net realizable value less the normal profit margin. The original cost of the inventory item is below the net realizable value less the normal profit margin. Under the lower-of-cost-or-market (LCM) method, the inventory item should be valued at

- A. Net realizable value.
- B. Net realizable value less the normal profit margin.
- C. Original cost.
- D. Replacement cost.



Answer (C) is correct.

When replacement cost is below the NRV and above the NRV less the normal profit margin, market equals replacement cost. Given that the original cost of the inventory item is below market, the original cost should be used to measure the inventory item under the LCM method.

61-

Lorraine Co. has determined its fiscal year-end inventory on a FIFO basis to be \$400,000. Information pertaining to that inventory follows:

Estimated selling price	\$408,000
Estimated cost of disposal	20,000
Normal profit margin	60,000
Current replacement cost	360,000

Lorraine records losses that result from applying the lower-of-cost-or-market (LCM) rule. At its year end, what should be the net carrying value of Lorraine's inventory?

- A. \$400,000
- B. \$388,000
- C. \$360,000
- D. \$328,000

Answer (C) is correct.

Under the LCM method, market is current replacement cost subject to a maximum (ceiling) equal to net realizable value and a minimum (floor) equal to net realizable value minus a normal profit. NRV equals selling price minus costs of completion and disposal. Here, original cost is \$400,000 and replacement cost is \$360,000. The LCM method uses the lower of the two, \$360,000, to measure inventory. However, the inventory measure cannot exceed the NRV of \$388,000 (\$408,000 selling price – \$20,000 cost of disposal). Furthermore, the inventory carrying amount cannot be lower than NRV minus normal profit, or \$328,000 (\$388,000 NRV – \$60,000 normal profit). Because the lower of cost or market (\$360,000) is between \$388,000 (ceiling) and \$328,000 (floor), the net carrying amount is \$360,000.

62-Which of the following is **true** regarding inventory adjustments under IFRS?

- A. IFRS do not require inventory adjustments.
- B. Reversals of adjustments are allowed in a subsequent period.
- C. A reversal of a previous write-down may be higher than the previous write-down.
- D. Adjustments may not be reversed in a subsequent period.

Answer (B) is **correct**.

Both IFRS and U.S. GAAP require the cost of inventory to be written down if the utility of the goods is impaired. Under IFRS, inventories are measured subsequent to initial recognition at the lower of cost and net realizable value (NRV), with NRV assessed each period. Moreover, unlike U.S. GAAP, IFRS permit inventory to be written up to the lower of cost and NRV if previously written down. The reversal is permissible only to the extent of the prior write-down.



63-

A company determined the following information for its inventory at the end of an interim period on June 30, Year 2:

Historical cost	\$80,000
Net realizable value (NRV)	77,000
Current replacement cost	76,000
Normal profit margin	2,000

The company expects that on December 31, Year 2, the inventory's NRV reduced by a normal profit margin will be at least \$81,000. What amount of inventory should the company report in its interim financial statements under IFRS and under U.S. GAAP on June 30, Year 2?

	IFRS	U.S. GAAP
A.	\$77,000	\$80,000
B.	\$77,000	\$76,000
C.	\$80,000	\$80,000
D.	\$80,000	\$81,000

Answer (A) is **correct**.

Under U.S. GAAP, inventory is reported at its historical cost of \$80,000 because no write-down of inventory is reasonably anticipated for the year. Under IFRS, the inventory is measured at the lower of cost (\$80,000) and NRV (\$77,000) for each interim reporting period. Whether a market decline is expected to be reversed by the end of the annual period is not considered. Thus, the inventory is reported at its NRV of \$77,000.



## 2.5 Classification of Investments

- Question: 64** Investments classified as held-to-maturity are measured at
- A. Fair value, with unrealized gains and losses reported in net income.
  - B. Fair value, with unrealized gains and losses reported in other comprehensive income (OCI).
  - C. Replacement cost, with no unrealized gains or losses reported.
  - D. Amortized cost, with no unrealized gains or losses reported.

Answer (D) is **correct**.

Assuming the fair value option has not been elected, held-to-maturity securities are reported at amortized cost, with no unrealized gains or losses reported.

- Question: 65** King Company has the following investment portfolio:

	<u>Cost</u>	<u>Fair Value</u>
Trading securities:		
Quill Company common stock	\$140,000	\$150,000
Barton, Inc., common stock	125,000	110,000
Delta, Inc., 8% bonds	225,000	240,000
Securities to be held to maturity:		
Armand, Inc., 9% bonds	80,000	84,000
Port City municipal bonds	180,000	210,000
Available-for-sale securities:		
Knox Co. common stock	45,000	51,000
Vernon, Inc., preferred stock	97,000	109,000

The total amount of these investments to be reported on King's statement of financial position is

- A. \$892,000
- B. \$902,000
- C. \$920,000
- D. \$954,000



Answer (C) is **correct**.

Trading securities and available-for-sale securities are reported at their fair values at each balance sheet date. Held-to-maturity securities are reported at amortized cost. The total amount of these investments to be reported on King's statement of financial position is therefore calculated as follows:

Trading securities:

Quill Company common stock	\$150,000
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Barton, Inc., common stock	110,000
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Delta, Inc., 8% bonds	240,000
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Securities to be held to maturity:

Armand, Inc., 9% bonds	80,000
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Port City municipal bonds	180,000
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Available-for-sale securities:

Knox Co. common stock	51,000
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Vernon, Inc., preferred stock	109,000
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Total	<u>\$920,000</u>
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**Question: 66** Which one of the following statements with regard to marketable securities is **incorrect**?

- A. In the trading portfolio of marketable equity securities, unrealized gains and losses are recorded on the income statement.
- B. In the available-for-sale portfolio of marketable equity securities, unrealized gains and losses are recorded on the income statement.
- C. The held-to-maturity portfolio consists only of debt securities.
- D. Securities may be transferred from the held-to-maturity to the available-for-sale portfolio.

Answer (B) is correct.

Assuming the fair value option has not been elected, unrealized holding gains and losses on available-for-sale securities are reported in other comprehensive income. (But all or part of unrealized holding gains and losses on available-for-sale securities designated and qualifying as hedged items in a fair value hedge are recognized in earnings.)



- Question: 67** Securities held primarily for sale in the near term to generate income on short-term price differences are known as
- A. Available-for-sale securities.
  - B. Equity securities.
  - C. Held-to-maturity securities.
  - D. Trading securities.

Answer (D) is **correct**.

Trading securities are bought and held primarily for sale in the near term. They are purchased and sold frequently. They are initially recorded at cost but are remeasured at fair value at each balance sheet date, with the unrealized holding gains or losses recognized in earnings.

- Question: 68** Unrealized gains and losses on trading securities should be presented in the
- A. Statement of financial position.
  - B. Income statement.
  - C. Notes to the financial statements.
  - D. Statement of retained earnings.

Answer (B) is **correct**.

Unrealized holding gains and losses on trading securities are included in earnings and are therefore reported in the income statement.

- Question: 69** Vanity Corporation holds investments in equity securities. These investments were acquired last year and have been properly classified as available-for-sale (AFS) securities. During the current year, the company sold some of the AFS securities at a loss. At year end, the remaining portfolio of AFS securities had appreciated in total value compared with the value at the end of last year. Based on these facts, which one of the following should Vanity report in its financial statements at the end of the current year?

<u>Income Statement</u>	<u>Balance sheet</u>
A. Unrealized loss on sale of AFS securities	Unrealized holding gain on appreciation of AFS securities
B. Realized loss on sale of AFS securities	Unrealized holding gain on appreciation of AFS securities
C. Unrealized holding gain on appreciation of AFS securities	Unrealized loss on sale of AFS securities.
D. Realized loss on sale of AFS securities and unrealized holding gain on appreciation of AFS securities	Unrealized holding gains/losses not reported here on AFS securities

Answer (B) is **correct**.

Realized losses on the sale of available-for-sale securities are included in the calculation of current period earnings. However, unrealized holding gains and losses on available-for-sale securities, including those classified as current assets, are excluded from earnings and are reported as components of other comprehensive income.





**Question: 70** Kale Co. purchased bonds at a discount on the open market as an investment and has the intent and ability to hold these bonds to maturity. Absent an election of the fair value option, Kale should account for these bonds at

- A. Cost.
- B. Amortized cost.
- C. Fair value.
- D. Lower of cost or market.

Answer (B) is **correct**.

Absent an election of the fair value option, investments in debt securities must be classified as held-to-maturity and measured at amortized cost in the balance sheet if the reporting entity has the positive intent and ability to hold them to maturity.

**Question: 71** At year end, Rim Co. held several investments with the intent of selling them in the near term. The investments consisted of \$100,000, 8%, 5-year bonds, purchased for \$92,000, and equity securities purchased for \$35,000. At year end, the bonds were selling on the open market for \$105,000, and the equity securities had a market value of \$50,000. What amount should Rim report as trading securities in its year-end balance sheet?

- A. \$50,000
- B. \$127,000
- C. \$142,000
- D. \$155,000

Answer (D) is **correct**.

Trading securities are debt securities not classified as held to maturity and equity securities with readily determinable fair values that are bought and held primarily for sale in the near term. Hence, the bonds and the equity securities are trading securities. They are initially recorded at cost but are subsequently measured at fair value at each balance sheet date. Quoted market prices in active markets are the best evidence of fair value. Based on market quotes at year end, the bonds had a fair value of \$105,000, and the equity securities had a fair value of \$50,000. The total is \$155,000.

**Question: 72** An entity should report the marketable equity securities that it has classified as trading at

- A. Lower of cost or market, with holding gains and losses included in earnings.
- B. Lower of cost or market, with holding gains included in earnings only to the extent of previously recognized holding losses.
- C. Fair value, with holding gains included in earnings only to the extent of previously recognized holding losses.
- D. Fair value, with holding gains and losses included in earnings.

Answer (D) is **correct**.

Trading securities are those held principally for sale in the near term. They are classified as current and consist of debt securities and equity securities with readily determinable fair values. Unrealized holding gains and losses on trading securities are reported in earnings. On a statement of financial position, these securities are reported at fair value.



**Question: 73** On December 31, Ott Co. had investments in trading securities as follows:

	Fair	
	Cost	Value
Man Co.	\$10,000	\$ 8,000
Kemo, Inc.	9,000	11,000
Fenn Corp.	11,000	9,000
	<u>\$30,000</u>	<u>\$28,000</u>

Ott's December 31 balance sheet should report the trading securities as

- A. \$26,000
- B. \$28,000
- C. \$29,000
- D. \$30,000

Answer (B) is **correct**.

Trading securities are reported at fair value, and unrealized holding gains and losses are included in earnings. Consequently, the securities should be reported as \$28,000.

**Question: 74** Nola Co. has a portfolio of marketable equity securities that it does not intend to sell in the near term. How should Nola classify these securities, and how should it report unrealized gains and losses from these securities?

	Classify as	Report in
A.	Trading securities	A component of income from continuing operations
B.	Available-for-sale securities	Other comprehensive income (OCI)
C.	Trading securities	Other comprehensive income (OCI)
D.	Available-for-sale securities	A component of income from continuing operations

Answer (B) is **correct**.

Marketable equity securities may be classified as either trading or available-for-sale (assuming no election of the fair value option). Equity securities that are not expected to be sold in the near term should be classified as available-for-sale. These securities should be reported at fair value, with unrealized holding gains and losses (except those on securities designated as being hedged in a fair value hedge) excluded from earnings and reported in OCI.



**Question: 75** The following information pertains to Lark Corp.'s available-for-sale securities:

	December 31	
	Year 2	Year 3
Cost	\$100,000	\$100,000
Fair value	90,000	120,000

Differences between cost and fair values are considered to be temporary. The decline in fair value was properly accounted for at December 31, Year 2. Ignoring tax effects, by what amount should other comprehensive income (OCI) be credited at December 31, Year 3?

- A. \$0
- B. \$10,000
- C. \$20,000
- D. \$30,000

Answer (D) is **correct**.

Unrealized holding gains and losses on available-for-sale securities, including those classified as current assets, are not included in earnings but ordinarily are reported in OCI, net of tax effects (ignored in this question). At December 31, Year 2 (assuming the securities are not designated as being hedged in a fair value hedge), OCI should have been debited for \$10,000 for the excess of cost over fair value to reflect an unrealized holding loss. At December 31, Year 3, OCI should be credited to reflect a \$30,000 unrealized holding gain (\$120,000 fair value at 12/31/Year 3 – \$90,000 fair value at 12/31/Year 2).

**Question: 76** The following information was extracted from Gil Co.'s December 31 balance sheet:

	Debit Balance
Noncurrent assets:	
Available-for-sale securities (carried at fair value)	\$96,450
Equity:	
Accumulated other comprehensive income (OCI)	
Unrealized gains and losses on available-for-sale securities	19,800
Historical cost of the available-for-sale securities was	

- A. \$63,595
- B. \$76,650
- C. \$96,450
- D. \$116,250

Answer (D) is **correct**.

The existence of an equity account with a debit balance signifies that the available-for-sale securities are reported at fair value that is less than historical cost. The difference is the net unrealized loss balance. Hence, historical cost must have been \$116,250 (\$96,450 available-for-sale securities at fair value + \$19,800 net unrealized loss).



**Question: 77** When the fair value of an investment in debt securities exceeds its amortized cost, how should each of the following debt securities be reported at the end of the year, given no election of the fair value option?

Debt Securities Classified As

	<u>Held-to-Maturity</u>	<u>Available-for-Sale</u>
A.	Amortized cost	Amortized cost
B.	Amortized cost	Fair value
C.	Fair value	Fair value
D.	Fair value	Amortized cost

Answer (B) is **correct**.

Investments in debt securities must be classified as held-to-maturity and measured at amortized cost in the balance sheet if the reporting entity has the positive intent and ability to hold them to maturity. Investments in equity securities are classified as either trading or available-for-sale. Equity securities that are not expected to be sold in the near term should be classified as available-for-sale. These securities should be reported at fair value, with unrealized holding gains and losses (except those on securities designated as being hedged in a fair value hedge) excluded from earnings and reported in OCI.

**Question: 78** Reed, Inc., began operations on January 1. The following information pertains to Reed's December 31 securities:

	<u>Trading</u>	<u>Available-for-Sale</u>
Cost	\$360,000	\$550,000
Fair value	320,000	450,000
Lower of cost or fair value		
applied to each security	304,000	420,000

If the declines are judged to be temporary, what amounts should Reed report for its trading and available-for-sale securities in the assets section of its December 31 balance sheet?

	<u>Trading</u>	<u>Available-for-Sale</u>
A.	\$360,000	\$550,000
B.	\$360,000	\$450,000
C.	\$320,000	\$450,000
D.	\$304,000	\$420,000

Answer (C) is **correct**.

Fair value accounting applies to both trading and available-for-sale securities. The difference in treatment is that the unrealized holding gains and losses are included in earnings for trading securities and in other comprehensive income for available-for-sale securities, assuming the latter are not designated as being hedged in a fair value hedge. Thus, these securities should be reported in the assets section of the balance sheet at their fair values of \$320,000 and \$450,000, respectively.



- Question: 79** An entity should report the marketable equity securities that it has classified as trading at
- A. Fair value, with holding gains included in earnings only to the extent of previously recognized holding losses.
  - B. Lower of cost or market, with holding gains included in earnings only to the extent of previously recognized holding losses.
  - C. Lower of cost or market, with holding gains and losses included in earnings.
  - D. Fair value, with holding gains and losses included in earnings.

Answer (D) is **correct**.

Trading securities are those held principally for sale in the near term. They are classified as current and consist of debt securities and equity securities with readily determinable fair values. Unrealized holding gains and losses on trading securities are reported in earnings. On a statement of financial position, these securities are reported at fair value.

- Question: 80** Johnstone Company owns 10,000 shares of Brevia Corporation's stock; Brevia currently has 40,000 shares outstanding. During the year, Brevia had net income of \$200,000 and paid \$160,000 in dividends. At the beginning of the year, there was a balance of \$150,000 in Johnstone's equity method investment in Brevia Corporation account. At the end of the year, the balance in this account should be
- A. \$160,000
  - B. \$240,000
  - C. \$110,000
  - D. \$150,000

Answer (A) is **correct**.

Johnstone holds 25% ( $10,000 \div 40,000$ ) of Brevia's voting common stock. Under the equity method, (1) an investor recognizes its share of the investee's net income as an increase in the investment account:

Investment in Brevia ( $\$200,000 \times 25\%$ ) \$50,000

Income -- equity-method investee \$50,000

(2) a dividend from the investee is treated as a return of an investment:

Cash ( $\$160,000 \times 25\%$ ) \$40,000

Investment in Brevia \$40,000

Thus, at the end of the year, the balance in the investment in Brevia account is \$160,000 ( $\$150,000 + \$50,000 - \$40,000$ ).



## 2.6 Equity Method

**Question: 81** The following information pertains to Lark Corp.'s available-for-sale securities:

	December 31	
	Year 2	Year 3
Cost	\$100,000	\$100,000
Fair value	90,000	120,000

Differences between cost and fair values are considered to be temporary. The decline in fair value was properly accounted for at December 31, Year 2. Ignoring tax effects, by what amount should other comprehensive income (OCI) be credited at December 31, Year 3?

- A. \$20,000
- B. \$30,000
- C. \$10,000
- D. \$0

Answer (B) is **correct**.

Unrealized holding gains and losses on available-for-sale securities, including those classified as current assets, are not included in earnings but ordinarily are reported in OCI, net of tax effects (ignored in this question). At December 31, Year 2 (assuming the securities are not designated as being hedged in a fair value hedge), OCI should have been debited for \$10,000 for the excess of cost over fair value to reflect an unrealized holding loss. At December 31, Year 3, OCI should be credited to reflect a \$30,000 unrealized holding gain (\$120,000 fair value at 12/31/Year 3 – \$90,000 fair value at 12/31/Year 2).

**Question: 82** On July 1, Year 1, Denver Corp. purchased 3,000 shares of Eagle Co.'s 10,000 outstanding shares of common stock for \$20 per share but did not elect the fair value option. On December 15, Year 1, Eagle paid \$40,000 in dividends to its common shareholders. Eagle's net income for the year ended December 31, Year 1, was \$120,000, earned evenly throughout the year. In its Year 1 income statement, what amount of income from this investment should Denver report?

- A. \$6,000
- B. \$12,000
- C. \$36,000
- D. \$18,000

Answer (D) is **correct**.

Denver Corp.'s purchase of 30% of Eagle presumably allows it to exercise significant influence. Hence, it should apply the equity method. The investor's share of the investee's income is a function of the percentage of ownership and the length of time the investment was held. The income from this investment was therefore \$18,000 [ $\$120,000 \times 30\% \times (6 \text{ months} \div 12 \text{ months})$ ].



- Question: 83** Investments classified as held-to-maturity are measured at
- A. Replacement cost, with no unrealized gains or losses reported.
  - B. Amortized cost, with no unrealized gains or losses reported.
  - C. Fair value, with unrealized gains and losses reported in net income.
  - D. Fair value, with unrealized gains and losses reported in other comprehensive income (OCI).

Answer (B) is **correct**.

Assuming the fair value option has not been elected, held-to-maturity securities are reported at amortized cost, with no unrealized gains or losses reported.

- Question: 84** Kale Co. purchased bonds at a discount on the open market as an investment and has the intent and ability to hold these bonds to maturity. Absent an election of the fair value option, Kale should account for these bonds at
- A. Fair value.
  - B. Lower of cost or market.
  - C. Amortized cost.
  - D. Cost.

Answer (C) is **correct**.

Absent an election of the fair value option, investments in debt securities must be classified as held-to-maturity and measured at amortized cost in the balance sheet if the reporting entity has the positive intent and ability to hold them to maturity.

- Question: 85** Which one of the following statements with regard to marketable securities is **incorrect**?
- A. In the available-for-sale portfolio of marketable equity securities, unrealized gains and losses are recorded on the income statement.
  - B. Securities may be transferred from the held-to-maturity to the available-for-sale portfolio.
  - C. In the trading portfolio of marketable equity securities, unrealized gains and losses are recorded on the income statement.
  - D. The held-to-maturity portfolio consists only of debt securities.

Answer (A) is **correct**.

Assuming the fair value option has not been elected, unrealized holding gains and losses on available-for-sale securities are reported in other comprehensive income. (But all or part of unrealized holding gains and losses on available-for-sale securities designated and qualifying as hedged items in a fair value hedge are recognized in earnings.)



- Question: 86** Beach Co. determined that the decline in the fair value (FV) of an investment was below the amortized cost and permanent in nature. The investment was classified as available-for-sale on Beach's books. The controller would properly record the decrease in FV by including it in which of the following?
- A. Other comprehensive income section of the income statement only.
  - B. Extraordinary items section of the income statement, net of tax, and writing down the cost basis to FV.
  - C. Earnings section of the income statement and writing down the cost basis to FV.
  - D. Other comprehensive income section of the income statement, and writing down the cost basis to FV.

Answer (C) is **correct**.

The amortized cost basis is used to calculate the amount of any impairment. The amortized cost basis should be distinguished from fair value, which equals the cost basis plus or minus the net unrealized holding gain or loss. If a decline in fair value of an individual available-for-sale security below its amortized cost basis is other than temporary, the amortized cost basis is written down to fair value as a new cost basis. The write-down is deemed to be a realized loss and is included in earnings.

- Question: 87** On January 1, Dyer Co. acquired as a long-term investment a 20% common stock interest in Eason Co. Dyer paid \$700,000 for this investment when the fair value and carrying amount of Eason's net assets was \$3.5 million. Dyer can exercise significant influence over Eason's operating and financial policies. For the year ended December 31, Eason reported net income of \$400,000 and declared and paid cash dividends of \$160,000. How much revenue from this investment should Dyer report for the year?
- A. \$80,000
  - B. \$32,000
  - C. \$48,000
  - D. \$112,000

Answer (A) is **correct**.

Because the investor can exercise significant influence over the investee's operating and financial policies, the investment should be accounted for using the equity method. The \$700,000 paid for the investment is equal to 20% of the \$3.5 million fair value. Moreover, the carrying amount and fair value of the net assets were the same. Thus, no goodwill impairment or other acquisition differential that might require adjustment of Dyer's share of the investee's net income is associated with this investment. Under these circumstances, revenue from the investment is 20% of the reported net income of \$400,000, or \$80,000. The cash dividend does not affect the amount of income to be reported.

- Question: 88** Securities held primarily for sale in the near term to generate income on short-term price differences are known as
- A. Equity securities.
  - B. Held-to-maturity securities.
  - C. Trading securities.
  - D. Available-for-sale securities.

Answer (C) is **correct**.

Trading securities are bought and held primarily for sale in the near term. They are purchased and sold frequently. They are initially recorded at cost but are remeasured at fair value at each balance sheet date, with the unrealized holding gains or losses recognized in earnings.





**Question: 89** On December 31, Ott Co. had investments in trading securities as follows:

	Cost	Fair Value
Man Co.	\$10,000	\$ 8,000
Kemo, Inc.	9,000	11,000
Fenn Corp.	11,000	9,000
	<u>\$30,000</u>	<u>\$28,000</u>

Ott's December 31 balance sheet should report the trading securities as

- A. \$29,000
- B. \$26,000
- C. \$28,000
- D. \$30,000

Answer (C) is **correct**.

Trading securities are reported at fair value, and unrealized holding gains and losses are included in earnings. Consequently, the securities should be reported as \$28,000.

**2.7 Business Combinations and Consolidated Financial Statements**

**Question: 90** Entity A acquires all of the voting shares of Entity B for \$1,000,000. At the time of the acquisition, the net fair value of the identifiable assets acquired and liabilities assumed had a carrying amount of \$900,000 and a fair value of \$800,000. The amount of goodwill Entity A will record on the acquisition date is

- A. \$100,000
- B. \$300,000
- C. \$0
- D. \$200,000

Answer (D) is **correct**.

Given no prior equity interest or noncontrolling interest, goodwill equals the excess of the fair value of the consideration transferred over the fair value of the net of the identifiable assets acquired and liabilities assumed. Consequently, goodwill is \$200,000 (\$1,000,000 – \$800,000).

**Question: 91** Costs incurred in completing a business combination are listed below.

General administrative costs	\$240,000
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Consulting fees	120,000
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Direct cost to register and issue equity securities	80,000
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The amount charged to the expenses of the business combination is

- A. \$120,000
- B. \$80,000
- C. \$360,000
- D. \$240,000

Answer (C) is **correct**.

Acquisition-related costs, such as finder's fees, professional and consulting fees, and general administrative costs, are expensed as incurred. But direct issue costs of equity (underwriting, legal, accounting, tax, registration, etc.) are debited to additional paid-in capital. Accordingly, the amount expensed is \$360,000 (\$240,000 + \$120,000).

**Question: 92** Linden Corporation is a defendant in a lawsuit where the plaintiff is seeking \$1,000,000 in damages. The company had terminated the plaintiff, George Russell, from his position with Linden after Russell allegedly sold specifications for one of Linden's new products to a competitor. Linden's attorney believes that it is quite possible Linden will lose the case and that, if so, damages could range from \$100,000 to \$200,000.

Regardless of the outcome of the case, Linden's accountants estimate the company will incur an additional \$5,000 in unemployment costs because of Russell's termination. The amount that Linden should accrue because of the contingency in this situation is

- A. \$200,000
- B. \$5,000
- C. \$100,000
- D. \$0



Answer (D) is **correct**.

Loss contingencies are accrued when the loss is probable. The \$5,000 in unemployment costs that will probably be incurred are a routine cost of doing business.

**Question: 93** Ichabod Company is the plaintiff in two lawsuits. The first suit involves a competitor who has made an exact copy of one of Ichabod's products, and Ichabod is suing for patent infringement. The attorneys estimate a \$5,000,000 award for Ichabod; however, it is anticipated that the case will be in litigation for 2 to 3 years before final resolution.

The second case also involves patent infringement; however, in this instance, the attorneys do not believe Ichabod has a strong case. It is estimated that the company has a 50% chance of winning and the award, if any, would be in the \$250,000 to \$1,000,000 range.

The **most** appropriate amount to be recorded as a gain contingency is

- A. \$5,000,000
- B. \$0
- C. \$5,125,000
- D. \$5,250,000

Answer (B) is **correct**.

Gain contingencies are not recorded; they are recognized only when realized. A gain contingency must be adequately disclosed.

**Question: 94** Vadis Co. sells appliances that include a 3-year warranty. Service calls under the warranty are performed by an independent mechanic under a contract with Vadis. Based on experience, warranty costs are estimated at \$30 for each machine sold. When should Vadis recognize these warranty costs?

- A. When the service calls are performed.
- B. When payments are made to the mechanic.
- C. When the machines are sold.
- D. Evenly over the life of the warranty.

Answer (C) is **correct**.

Under the accrual method, a provision for warranty costs is made when the related revenue is recognized.



Question: 6 Alton Corporation purchased 100% of the shares of Jones Corporation for \$600,000. Financial information for Jones Corporation is provided below.

	Jones Corporation (\$000)	
	Carrying Amount	Fair Value
Cash	\$ 50	\$ 50
Accounts receivable	100	100
Inventory	150	100
Total current assets	300	250
Property, plant, and equipment (net)	500	600
Total assets	\$800	\$850
Current liabilities	\$150	\$150
Long-term debt	200	200
Total liabilities	350	350
Common stock	150	150
Paid-in capital	80	80
Retained earnings	220	
Total shareholders' equity	450	
Total liabilities and shareholders' equity	\$800	

The amount of goodwill resulting from this purchase, if any, would be

- A. \$0
- B. \$100,000
- C. \$200,000
- D. \$150,000

Answer (B) is **correct**.

Goodwill is the excess of (1) the sum of the acquisition-date fair values of (a) the consideration transferred (\$600,000), (b) any noncontrolling interest in the acquiree (\$0), and (c) the acquirer's previously held equity interest in the acquiree (\$0) over (2) the net of the acquisition-date fair values of the identifiable assets acquired (\$850,000) and liabilities assumed (\$350,000). The amount of goodwill is calculated as follows:

Consideration transferred	\$600,000
Acquisition-date fair value of net assets acquired (\$850,000 – \$350,000)	(500,000)
Goodwill	\$100,000



**Question: 96** During Year 3, Rex Co. introduced a new product carrying a 2-year warranty against defects. The estimated warranty costs related to dollar sales are 2% within 12 months following sale and 4% in the second 12 months following sale. Sales and actual warranty expenditures for the years ended December 31, Year 3 and Year 4, are as follows:

## Actual Warranty

	Sales	Expenditures
	<hr/>	<hr/>
Year 3	\$ 600,000	\$ 9,000
Year 4	1,000,000	30,000
	<hr/>	<hr/>
	\$1,600,000	\$39,000
	<hr/>	<hr/>

At December 31, Year 4, Rex should report an estimated warranty liability of

- A. \$96,000
- B. \$0
- C. \$39,000
- D. \$57,000

Answer (D) is **correct**.

Because this product is new, the beginning balance in the estimated warranty liability account at the beginning of Year 3 is \$0. For Year 3, the estimated warranty costs related to dollar sales are 6% (2% + 4%) of sales or \$36,000 ( $\$600,000 \times 6\%$ ). For Year 4, the estimated warranty costs are \$60,000 ( $\$1,000,000 \text{ sales} \times 6\%$ ). These amounts are charged to warranty expense and credited to the estimated warranty liability account. This liability account is debited for expenditures of \$9,000 and \$30,000 in Year 3 and Year 4, respectively. Hence, the estimated warranty liability at 12/31/Yr 4 is \$57,000.

## Estimated Warranty Liability

	\$ 0	1/1/Yr 3
Year 3 expenditures \$ 9,000	36,000	Year 3 expense
Year 4 expenditures 30,000	60,000	Year 4 expense
	<hr/>	
	\$57,000	12/31/Yr 4

**Question: 97** In May Year 1, Caso Co. filed suit against Wayne, Inc., seeking \$1.9 million in damages for patent infringement. A court verdict in November Year 4 awarded Caso \$1.5 million in damages, but Wayne's appeal is not expected to be decided before Year 6. Caso's counsel believes it is probable that Caso will be successful against Wayne for an estimated amount in the range between \$800,000 and \$1.1 million, with \$1 million considered the most likely amount. What amount should Caso record as income from the lawsuit in the year ended December 31, Year 4?

- A. \$800,000
- B. \$1,000,000
- C. \$1,500,000
- D. \$0



Answer (D) is **correct**.

Gain contingencies are not recognized until they are realized. Because the appeal is not expected to be decided before Year 6, Caso should not record any revenue from the lawsuit in the Year 4 income statement. This gain contingency should be disclosed; however, care should be taken to avoid misleading implications as to the likelihood of realization.

- Question: 98** Entity X owns 90% of Entity Y. Early in the year, X lent Y \$1,000,000. No payments have been made on the debt by year end. Proper accounting at year end in the consolidated financial statements would
- A. Eliminate 100% of the receivable, the payable, and the related interest.
  - B. Eliminate 90% of the receivable, the payable, and the related interest.
  - C. Eliminate 90% of the receivable and the payable but not any related interest.
  - D. Eliminate 100% of the receivable and the payable but not any related interest.

Answer (A) is **correct**.

In a consolidated statement of financial position, reciprocal balances, such as receivables and payables, between a parent and a consolidated subsidiary should be eliminated in their entirety regardless of the portion of the subsidiary's shares held by the parent. Thus, all effects of the \$1,000,000 loan should be eliminated in the preparation of the year-end consolidated statement of financial position.



## 2.8 Different Types of Expenses and Liabilities

**Question: 99** Par Corp. owns 60% of Sub Corp.'s outstanding capital stock. On May 1, Par advanced Sub \$70,000 in cash, which was still outstanding at December 31. What portion of this advance should be eliminated in the preparation of the December 31 consolidated balance sheet?

- A. \$0
- B. \$70,000
- C. \$42,000
- D. \$28,000

Answer (B) is **correct**.

In a consolidated balance sheet, reciprocal balances, such as receivables and payables, between a parent and a consolidated subsidiary should be eliminated in their entirety regardless of the portion of the subsidiary's stock held by the parent. Thus, the entire \$70,000 advance should be eliminated in the preparation of the year-end consolidated balance sheet.

**Question: 100** Water Co. owns 80% of the outstanding common stock of Fire Co. On December 31, Year 3, Fire sold equipment to Water at a price in excess of Fire's carrying amount but less than its original cost. On a consolidated balance sheet at December 31, Year 3, the carrying amount of the equipment should be reported at

- A. Fire's original cost.
- B. Water's original cost minus 80% of Fire's recorded gain.
- C. Water's original cost minus Fire's recorded gain.
- D. Water's original cost.

Answer (C) is **correct**.

In consolidated financial statements, the effects of intraentity transactions should be eliminated. The original amount recorded for the acquisition by Water Co. of the equipment from Fire Co. was the carrying amount on Fire's balance sheet plus the gain on the sale. In the consolidated financial statements, the equipment should be reported at the amount previously recorded on Fire's balance sheet. This amount is the original cost recorded by Water minus the gain recognized by Fire when the transaction took place.

**Question: 101** Warren Company is being sued in a wrongful discharge suit for \$500,000. The company attorney has advised Warren that the probability of the plaintiff prevailing and receiving the full amount is about 80%. The attorney also indicated that the case would likely be tied up in the courts for 2 to 3 years. The **most** appropriate financial statement presentation for this loss contingency would be to

- A. Record \$500,000 as a loss contingency.
- B. Record \$400,000 as a loss contingency.
- C. Disclose the loss contingency in the footnotes.
- D. Not record or footnote the loss contingency.

Answer (A) is **correct**.

A liability arising from a loss contingency should be recorded if the contingent future event will probably occur and the amount of the loss can be reasonably estimated.



**Question: 102** East Corp. manufactures stereo systems that carry a 2-year warranty against defects. Based on past experience, warranty costs are estimated at 4% of sales for the warranty period. During the year, stereo system sales totaled \$3 million, and warranty costs of \$67,500 were incurred. In its income statement for the year ended December 31, East should report warranty expense of

- A. \$120,000
- B. \$52,500
- C. \$67,500
- D. \$60,000

Answer (A) is **correct**.

Warranty expense equals 4% of sales for the period, or \$120,000 ( $\$3,000,000 \times 4\%$ ).

**Question: 103** A liability arising from a loss contingency should be recorded if the

- A. Contingent future events have a reasonably possible chance of occurring.
- B. Contingent future events will probably occur and the amount of the loss can be reasonably estimated.
- C. Amount of the loss can be reasonably estimated.
- D. Contingent future events have a reasonably possible chance of occurring and the amount of the loss can be reasonably estimated.

Answer (B) is **correct**.

A material contingent loss must be accrued when the following two conditions are met:

1. It is probable that, at the balance sheet date, an asset has been impaired or a liability has been incurred.

The amount of the loss can be reasonably estimated.

**Question: 104** On April 1, Ash Corp. began offering a new product for sale under a 1-year warranty. Of the 5,000 units in inventory at April 1, 3,000 had been sold by June 30. Based on its experience with similar products, Ash estimated that the average warranty cost per unit sold would be \$8. Actual warranty costs incurred from April 1 through June 30 were \$7,000. At June 30, what amount should Ash report as estimated warranty liability?

- A. \$9,000
- B. \$16,000
- C. \$33,000
- D. \$17,000

Answer (D) is **correct**.

If 3,000 units were sold at an estimated \$8 per unit warranty cost, the total credits to the liability account equaled \$24,000 ( $3,000 \times \$8$ ). Given that actual warranty costs of \$7,000 were debited to the account, the ending balance must have been \$17,000 ( $\$24,000 - \$7,000$ ).





**Question: 105** Shep Co. has a receivable from its parent, Pep Co. Should this receivable be separately reported in Shep's balance sheet and in Pep's consolidated balance sheet.

Shep's Balance Sheet	Pep's Consolidated Balance Sheet
A. Yes	Yes
B. No	Yes
C. Yes	No
D. No	No

Answer (C) is **correct**.

In a consolidated balance sheet, reciprocal balances, such as receivables and payables, between a parent and a consolidated subsidiary are eliminated in their entirety, regardless of the portion of the subsidiary's stock held by the parent. However, intraentity transactions should not be eliminated from the separate financial statements of the entities.

**Question: 106** How should the acquirer recognize a bargain purchase in a business acquisition?

- A. As negative goodwill in the statement of financial position.
- B. As a gain in earnings at the acquisition date.
- C. As a deferred gain that is amortized into earnings over the estimated future periods benefited.
- D. As goodwill in the statement of financial position.

Answer (B) is **correct**.

A bargain purchase is recognized in the consolidated financial statements as an ordinary gain at the acquisition date. A bargain purchase occurs when the net of the acquisition-date fair values of identifiable assets acquired and liabilities assumed exceeds the sum of the acquisition-date fair values of the consideration transferred, any noncontrolling interest recognized, and any previously held equity interest in the acquiree.



Question: 18

A conglomerate entity acquired 100% of the net assets of a target entity for \$900 cash. The target entity's statement of financial position just prior to the acquisition is presented below.

## Target Entity (as of acquisition date)

	Carrying Amount	Fair Value
Cash	\$ 100	\$100
Receivables	200	200
Inventory	150	200
Property, plant, and equipment (net)	600	400
Total assets	<u>\$1,050</u>	<u>\$900</u>
Current liabilities	\$ 200	\$200
Share capital	200	
Retained earnings	650	
Total liabilities and equity	<u>\$1,050</u>	

The amount of goodwill to be recorded by the conglomerate entity related to its purchase of the target entity is

- A. \$(200)
- B. \$50
- C. None of the answers are correct.
- D. \$200

Answer (D) is **correct**.

Given no prior equity interest and no noncontrolling interest, goodwill is the excess of the fair value of the consideration transferred over the net of the fair values of the identifiable net assets acquired. This net fair value equals the sum of cash, receivables, inventory, and PPE, minus liabilities. Hence, the net fair value acquired is \$700, and goodwill is \$200 (\$900 fair value of the consideration transferred – \$700).

Question: 108

A corporation entered into a purchase commitment to buy inventory. At the end of the accounting period, the current market value of the inventory was less than the fixed purchase price by a material amount. Which of the following accounting treatments is **most** appropriate?

- A. Describe the nature of the contract in a note to the financial statements, recognize a loss in the income statement, and recognize a reduction in inventory equal to the amount of the loss by use of a valuation account.
- B. Describe the nature of the contract and the estimated amount of the loss in a note to the financial statements, but do not recognize a loss in the income statement.
- C. Neither describe the purchase obligation nor recognize a loss on the income statement or balance sheet.
- D. Describe the nature of the contract in a note to the financial statements, recognize a loss in the income statement, and recognize a liability for the accrued loss.



Answer (D)

is **correct**.

A commitment to acquire goods in the future is not recorded at the time of the agreement, e.g., by debiting an asset and crediting a liability. But recognition in earnings of a loss on goods subject to a firm purchase commitment is required if the market price of these goods declines below the commitment price. The reason for current loss recognition is the same as that for inventory on hand. A decrease (not an increase) in the future benefits of the commitment should be recognized when it occurs. Thus, the lower of cost or market rule is followed. If material losses are expected to arise from firm, noncancelable, and unhedged commitments for the future purchase of inventory, they should be measured in the same way as inventory losses, and, if material, recognized and separately disclosed in the income statement. The entry is to debit unrealized holding loss-earnings and to credit liability-purchase commitment. Furthermore, certain disclosures are required for unconditional purchase obligations that are unrecorded. They include the nature and term of the obligation.

**Question: 109** Which one of the following loss contingencies would be accrued as a liability rather than disclosed in the notes to the financial statement?

- A. A guarantee of the indebtedness of another.
- B. A dispute over additional income taxes assessed for prior years (now in litigation).
- C. Liabilities for service or product warranties made as a regular part of business.
- D. A pending lawsuit with an uncertain outcome.

Answer (C) is **correct**.

Similarly to the guidelines for loss contingencies, a liability for future warranty costs should be accrued if (1) the incurrence of the expense is probable and (2) the amount can be reasonably estimated.

**Question: 110** Net losses on firm purchase commitments to acquire goods for inventory result from a contract price that exceeds the current market price. If a firm expects that losses will occur when the purchase occurs, expected losses, if material,

- A. Should not be recognized in the accounts until the contract is executed and need not be separately disclosed in the financial statements.
- B. Should be recognized in the accounts and separately disclosed as net unrealized losses on the balance sheet at the end of the period during which the decline in price takes place.
- C. Should be recognized in the accounts and separately disclosed as net unrealized losses on the balance sheet at the end of the period during which the contract is executed.
- D. Should be recognized in the accounts and separately disclosed as losses on the income statement of the period during which the decline in price takes place.

Answer (D) is **correct**.

A loss is accrued in the income statement on goods subject to a firm purchase commitment if the market price of these goods declines below the commitment price. This loss should be measured in the same manner as inventory losses. Disclosure of the loss is also required.



## **Measurement, Valuation, and Disclosure: Investments and Short-Term Items**

### ***3.1 Property, Plant, and Equipment***

**Question: 1** Which of the following is not an appropriate basis for measuring the cost of property, plant, and equipment?

- A.** The purchase price, freight costs, and installation costs of a productive asset should be included in the asset's cost.
- B.** Proceeds obtained in the process of readying land for its intended purpose, such as from the sale of cleared timber, should be recognized immediately as income.
- C.** The costs of improvements to equipment incurred after its acquisition should be added to the asset's cost if they increase future service potential.
- D.** All costs incurred in the construction of a plant building, from excavation to completion, should be considered as part of the asset's cost.

Answer (B) is **correct**.

Accordingly, items of property, plant, and equipment (PPE) that meet the recognition criterion are initially measured at cost. The cost includes the purchase price (minus trade discounts and rebates, plus purchase taxes) and the directly attributable costs of bringing the assets to working condition for their intended use. Directly attributable costs include site preparation, installation, initial delivery and handling, architect and equipment fees, costs of removing the assets and restoring the site, etc. Accordingly, the cost of land includes the cost of obtaining the land and readying it for its intended uses, but it is inappropriate to recognize the proceeds related to site preparation immediately in profit or loss. They should be treated as reductions in the price of the land.

**Question: 2** An entity installed an assembly line in Year 1. Four years later, \$100,000 was invested to automate the line. The automation increased the market value and productive capacity of the assembly line but did not affect its useful life. Proper accounting for the cost of the automation should be to

- A.** Report it as an expense in Year 5.
- B.** Establish a separate account for the \$100,000.
- C.** Allocate the cost of automation between the asset and accumulated depreciation accounts.
- D.** Debit the cost to the property, plant, and equipment account.

Answer (D) is **correct**.

Subsequent costs are added to the carrying amount of an item of PPE if it is probable that, as a result, future economic benefits will be received, and the costs are reliably measurable. An extended useful life, improved output quantity or quality, and reduced operating costs are all future economic benefits.



**Question: 3** The selected data from statements of financial position on December 31, Year 1, and December 31, Year 2, is presented below:

	12/31/Year 1	12/31/Year 2	Additional information for Year 2:
Property, plant,  and equipment	\$295,000	\$340,000	1. Equipment was acquired for \$65,000. 2. Depreciation expense was \$30,000.
Accumulated  depreciation	(102,000)	(119,000)	

The carrying amount (cost minus accumulated depreciation) of property, plant, and equipment disposed of in Year 2 was

- A. \$7,000
- B. \$17,000
- C. \$20,000
- D. \$32,000

Answer (A) is **correct**.

The Year 2 beginning carrying amount is \$193,000 (\$295,000 – \$102,000), and the Year 2 ending carrying amount is \$221,000 (\$340,000 – \$119,000). The carrying amount of PPE disposed of is \$7,000 (\$193,000 beginning balance + \$65,000 acquired during Year 2 – \$30,000 depreciation expense – \$221,000 ending balance).

**Question: 4** A theme park purchased a new, exciting ride and financed it through the manufacturer. The following facts pertain:

Purchase price	\$800,000
Delivery cost	50,000
Installation cost	70,000
Cost of trial runs	40,000
Interest charges for first year	60,000

The straight-line method is to be used. Compute the depreciation on the equipment for the first year assuming an estimated service life of 5 years.

- A. \$160,000
- B. \$184,000
- C. \$192,000
- D. \$204,000



Answer (C) is **correct**.

Under the straight-line method, the annual depreciation expense for an asset equals the asset's amount (cost – residual value) divided by the asset's estimated useful life. The cost of the asset includes its price and the directly attributable costs of bringing it to working condition for intended use. Thus, the depreciation expense is \$192,000 [(\$800,000 purchase price + \$50,000 delivery cost + \$70,000 installation cost + \$40,000 trial-run cost) ÷ 5-year estimated service life]. Borrowing costs incurred after the asset is prepared for its intended use are expensed even if the allowed alternative treatment of such costs is followed, and the asset otherwise satisfies the criteria for capitalization of such expenses.

**Question: 5** Which of the following is **not** an appropriate basis for measuring the historical cost of property, plant, and equipment?

- A. Delivery and handling costs and installation costs of a productive asset should be included in the asset's cost.
- B. The cost should include the purchase price without a deduction for trade discounts.
- C. The costs of improvements to equipment incurred after its acquisition should be added to the asset's cost if they provide future economic benefits exceeding the originally assessed standard of performance.
- D. All costs incurred in the construction of a plant building, from excavation to completion, should be considered as part of the asset's cost.

Answer (B) is **correct**.

An asset classified under property, plant, and equipment is measured initially at cost. This amount includes the purchase price and any directly attributable costs of bringing the asset to working condition for its intended use. Directly attributable costs include costs of, for example, site preparation, initial delivery and handling, installation, professional fees (e.g., those of architects and engineers), and dismantling and removing the asset and restoring the site. The purchase price is determined by adding any import fees and nonrefundable purchase taxes and subtracting any trade discounts and rebates.

**Question: 6** In making a cash flow analysis of property, plant, and equipment (PPE), the internal auditor discovered that depreciation expense for the period was \$10,000. PPE with a cost of \$50,000 and related accumulated depreciation of \$30,000 was sold for a gain of \$1,000. If the carrying amount of PPE increased by \$80,000 during the period, how much PPE was purchased this period?

- A. \$91,000
- B. \$100,000
- C. US \$110,000
- D. \$119,000

Answer (C) is **correct**.

The carrying amount of the PPE account, net of accumulated depreciation, is increased by the cost of purchases and decreased by the carrying amount of items of PPE sold and depreciation. The net PPE decreased by the carrying amount of items sold, or \$20,000 (\$50,000 cost – \$30,000 accumulated depreciation), and by the \$10,000 of depreciation. If PPE still increased by \$80,000, \$110,000 (\$30,000 total decrease + \$80,000 increase) of equipment must have been purchased.



- Question: 7** On January 1, Year 1, an entity purchased an abandoned quarry for \$1,200,000 to be used as a landfill to service its trash collection contracts with nearby cities for the next 20 years. The entity depletes the quarry using the units-of-production method based on a surveyor's measurements of volume of the quarry's pit. This amount was 500,000 cubic yards when purchased and 350,000 cubic yards at year-end Year 5. What is the net amount that should be shown on the entity's December 31, Year 5, statement of financial position for the quarry?
- A. \$1,200,000
  - B. \$900,000
  - C. \$840,000
  - D. \$360,000

Answer (C) is **correct**.

The units-of-production method allocates cost based on output. The net amount reported as an asset for the quarry using this method is \$840,000  $[(350,000 \text{ cubic yards} \div 500,000 \text{ total cubic yards}) \times \$1,200,000]$ .

- Question: 8** A new machine has an initial cost of \$300,000, an estimated useful life of 2,000 hours of use over a 3-year period, and an estimated residual value of \$70,000. Usage rates are estimated as 500 hours in the first year, 700 hours in the second year, and 800 hours in the third year. Depreciation expense in Year 2 under the units-of-production method of depreciation will be
- A. \$57,500
  - B. \$75,000
  - C. \$80,500
  - D. \$105,000

Answer (C) is **correct**.

Depreciation expense equals cost minus residual value, times the estimated hours of use in Year 2 divided by the total estimated hours of use. Thus, depreciation expense is \$80,500  $[(\$300,000 - \$70,000) \times (700 \text{ hours} \div 2,000 \text{ hours})]$ .

- Question: 9** A company uses straight-line depreciation for financial reporting purposes, but uses accelerated depreciation for tax purposes. Which of the following account balances would be lower in the financial statements used for tax purposes than it would be in the general purpose financial statements?
- A. Accumulated depreciation.
  - B. Cash.
  - C. Retained earnings.
  - D. Gross property, plant, and equipment.

Answer (C) is **correct**.

Because the tax basis uses an accelerated method, depreciation expense and accumulated depreciation will be greater. Moreover, taxable income will be lower than financial net income. Consequently, tax-basis retained earnings will be less than that in the general purpose financial statements.

- Question: 10** All of the following would be included as part of the cost of a depreciable asset **except** the
- A. Costs to level land to make it usable for the company's purposes.
  - B. Freight costs to ship new equipment to the company's facility.
  - C. Actual interest costs incurred during the construction of a new building.
  - D. Costs to construct a driveway on the company's property.





Answer (A) is **correct**.

Site preparation costs [clearing, draining, filling, leveling the property, and razing existing buildings, minus any proceeds (such as timber sales)] are costs of the land, not of the building to be constructed on the land.

**Question: 11** The board of directors of Ingold Industries, Inc., authorized Don Burger, president of Ingold, to pay as much as \$90,000 to purchase a tract of land adjacent to the main factory. Burger negotiated a price of \$75,800 for the land, and legal fees for closing costs amounted to \$820. A contractor cleared, filled, and graded the land for \$6,800, and dug the foundation for a new building for \$4,300. A prefabricated building was erected at a cost of \$181,000. The building has an estimated useful life of 20 years with no residual value. The contractor's bill indicated that the cost of the parking lot and driveways was \$7,060. The parking lot and the driveways will need to be replaced in 15 years. The proper amount to be recorded in Ingold's land account is

- A. \$76,620
- B. \$83,420
- C. \$87,720
- D. \$90,480

Answer (B) is **correct**.

The cost of acquiring and preparing land for its expected use is capitalized. The amount to be recorded in the land account is \$83,420, consisting of the \$75,800 purchase price, the \$820 closing costs, and the \$6,800 site preparation costs.

**Question: 12** Basic Brick, Inc., purchased manufacturing equipment for \$100,000, with an estimated useful life of 10 years and a salvage value of \$15,000. The second year's depreciation for this equipment using the double-declining balance method is

- A. \$8,500
- B. \$13,600
- C. \$16,000
- D. \$20,000

Answer (C) is **correct**.

Under the double-declining balance method, the full cost of the asset, or \$100,000, is depreciated, but not below salvage value. Because the straight-line rate for a 10-year asset is 10% ( $100\% \div 10$ ), the double-declining balance rate is 20% ( $10\% \times 2$ ). The first year's depreciation is \$20,000 ( $\$100,000 \times 20\%$ ), leaving a carrying amount for the second year of \$80,000 ( $\$100,000 - \$20,000$ ). The second year's depreciation is thus \$16,000 ( $\$80,000 \times 20\%$ ).

**Question: 13** Which one of the following characteristics is **not** required for an asset to be properly described as property, plant, and equipment?

- A. Held for use and not for investment.
- B. Newly purchased.
- C. Expected life of more than 1 year.
- D. Tangible.





Answer (B) is **correct**.

These assets are known variously as property, plant, and equipment; fixed assets; or plant assets.

1. PPE are tangible. They have physical existence.
2. PPE may be either personal property (something movable, e.g., equipment) or real property (such as land or a building).
3. PPE are used in the ordinary operations of an entity and are not held primarily for investment, resale, or inclusion in another product. But they are often sold.
4. PPE are noncurrent. They are not expected to be used up within 1 year or the normal operating cycle of the business, whichever is longer.

However, an asset need not be newly purchased to be properly described as property, plant, and equipment.

**Question: 14** Equipment bought by Wilson Steam Generating Company 3 years ago was charged to equipment expense in error. The cost of the equipment was \$100,000, with no expected salvage value and a 10-year estimated life. Wilson uses the straight-line depreciation method on similar equipment. The error was discovered at the end of Year 3 prior to the issuance of Wilson's financial statements. After correction of the error, the correct carrying value of the equipment will be

- A. \$30,000
- B. \$70,000
- C. \$80,000
- D. \$100,000

Answer (B) is **correct**.

The straight-line depreciation that should have been charged to the equipment had it been properly capitalized is \$30,000 [ $\$100,000 \times (3 \div 10 \text{ years})$ ]. Thus, after correction of the error, the carrying amount of the equipment will be \$70,000 ( $\$100,000 - \$30,000$ ).

**Question: 15** The types of assets that qualify for interest capitalization are

- A. Assets that are being used in the earning activities of the reporting entity.
- B. Assets that are ready for their intended use in the activities of the reporting entity.
- C. Assets that are constructed for the reporting entity's own use.
- D. Inventories that are manufactured in large quantities on a continuing basis.

Answer (C) is **correct**.

Interest should be capitalized for (1) assets constructed or otherwise produced for an entity's own use, including those constructed or produced by others; (2) assets intended for sale or lease that are constructed or produced as discrete projects (e.g., ships); and (3) certain equity-based investments. An asset constructed for an entity's own use qualifies for capitalization of interest if (1) relevant expenditures have been made, (2) activities necessary to prepare the asset for its intended use are in progress, and (3) interest is being incurred. The investee must have activities in progress necessary to commence its planned principal operations and be expending funds to obtain qualifying assets for its operations.



**Question: 16**

Wellington Industries has owned its present facilities since 1981, and Mary Dunlap, CEO, has authorized various expenditures to repair and improve the building during the current year. The building was beginning to sag, and without repair, the building would only last another 8 years. To correct the problem, the foundation was reinforced, and several columns were added in the basement area at a cost of \$47,200. As a result, engineers estimate that the building will have a remaining useful life of 20 years. To install a new computer local area network (LAN) and be ready for the next generation of computers, the phone lines and electrical systems were updated at a cost of \$81,300. Wellington engineers estimate that these improvements should last 25 years. The offices and open work spaces were rearranged to reduce exposure to electronic emissions at a material cost of \$31,000. The purchase and installation of the computers and software for the LAN cost \$102,700. The LAN hardware and software will have to be replaced in 6 years, but further rearrangement of the offices and work spaces will not be necessary. After the above improvements were completed, the entire building was painted inside and outside at a cost of \$9,450.

As controller of Wellington Industries, which one of the following actions would you recommend to be in conformity with generally accepted accounting principles?

- A. Treat all expenditures as expenses in the current year except the cost of rearrangement (\$31,000), which should be amortized over a period not to exceed 20 years.
- B. Capitalize all expenditures because they represent additions, improvements, and rearrangements.
- C. Capitalize all costs with the exception of the upgrade to the phone and electrical systems and the painting because they represent maintenance expenses.
- D. Capitalize all costs with the exception of the painting because it represents maintenance expense.

Answer (D) is **correct**.

Expenditures on capital assets that improve the asset's performance or extend its useful life are capitalized as part of the asset's cost. Accordingly, the building repairs are capitalized. The substitution of a better computer system is classified as an improvement, and the costs also should be capitalized. Moreover, the entity capitalizes the costs of a rearrangement of the configurations of the offices and open work spaces that (1) requires material outlays, (2) is separable from recurring expenses, and (3) provides probable future benefits. However, expenditures that merely maintain the asset at an acceptable level of productivity are expensed as they are incurred. Thus, the costs of painting the building are routine, minor outlays that should be expensed immediately.

**Question: 17**

Lakeside Electric purchased a truck for \$38,600 to transport equipment to various job sites. For this purpose, storage bins were welded to the truck bed at a cost of \$1,700. Doug Lombardi, controller of Lakeside, estimates the useful life of the truck to be 5 years and the residual value to be \$1,000. Using the double-declining balance method, the depreciation expense on the truck for its second year of use is

- A. \$9,024
- B. \$9,264
- C. \$9,432
- D. \$9,672



Answer (D) is **correct**.

Under the double-declining balance method, the full cost of the asset, or \$40,300 (\$38,600 + \$1,700), is depreciated, but not below salvage value. Because the straight-line rate for a 5-year asset is 20% ( $100\% \div 5$ ), the double-declining balance rate is 40% ( $20\% \times 2$ ). The first year's depreciation is \$16,120 ( $\$40,300 \times 40\%$ ), leaving a carrying amount for the second year of \$24,180 ( $\$40,300 - \$16,120$ ). The second year's depreciation is thus \$9,672 ( $\$24,180 \times 40\%$ ).

**Question: 18** Albright Company uses the sum-of-the-years'-digits (SYD) method of depreciation. On January 1, the company purchased a machine for \$50,000. It had an estimated life of 5 years and no residual value. Depreciation for the first year would be

- A. \$10,000
- B. \$15,000
- C. \$16,667
- D. \$20,000

Answer (C) is **correct**.

The SYD method multiplies a constant depreciable base (cost minus residual value) by a declining fraction. The numerator is the number of years of the useful life minus the years elapsed ( $5 - 0 = 5$ ). The denominator is the sum of the digits of the years in the asset's useful life ( $1 + 2 + 3 + 4 + 5$ ). The first year's depreciation expense is therefore \$16,667 [ $\$50,000 \times (5 \div 15)$ ].

**Question: 19** When a fixed plant asset with a 5-year estimated useful life is sold during the second year, how would the use of an accelerated depreciation method instead of the straight-line method affect the gain or loss on the sale of the fixed plant asset?

Gain	Loss
------	------

- A. Increase Increase
- B. Increase Decrease
- C. Decrease Increase
- D. Decrease Decrease

Answer (B) is **correct**.

An accelerated method reduces the carrying amount of the asset more rapidly in the early years of the useful life than does the straight-line method. Hence, the effect of an early sale is to increase the gain or decrease the loss that would have been recognized under the straight-line method.

**Question: 20** Which one of the following methods of depreciation will result in the lowest reported net income in the early life of a depreciable asset?

- A. Composite depreciation method.
- B. Group depreciation method.
- C. Straight-line depreciation method.
- D. Sum-of-the-years'-digits depreciation method.



Answer (D) is **correct**.

Sum-of-the-years'-digits depreciation has the highest depreciation expense in the early years of an asset's life, resulting in lower net income.

- Question: 21** Silken, Inc., a distributor of silk goods, is in its first year of operation. The company has purchased ten computers at \$3,500 each with an estimated life of 6 years; five desks at \$500 each with an estimated life of 10 years; and two word processors at \$300 each, with an estimated life of 4 years. No residual value is anticipated for any of these assets. Silken wants to adopt a depreciation method that will be easy to use and reflect an appropriate depreciation expense for the business each accounting period. The **most** appropriate method would be
- A. Composite depreciation.
  - B. Group depreciation.
  - C. Inventory method.
  - D. Replacement method.

Answer (A) is **correct**.

Group and composite depreciation methods use the straight-line technique for an aggregate of assets. The composite method is used for dissimilar assets.

- Question: 22** In which of the following situations is the units-of-production method of depreciation **most** appropriate?
- A. An asset's service potential declines with use.
  - B. An asset's service potential declines with the passage of time.
  - C. An asset is subject to rapid obsolescence.
  - D. An asset incurs increasing repairs and maintenance with use.

Answer (A) is **correct**.

The units-of-production depreciation method allocates asset cost based on the level of production. As production varies, so will the credit to accumulated depreciation. Consequently, when an asset's service potential declines with use, the units-of-production method is the most appropriate method.

- Question: 23** Under IFRS, according to the revaluation model, an item of property, plant, and equipment must be carried at
- A. Cost minus any accumulated depreciation.
  - B. Cost minus residual value.
  - C. Fair value minus any subsequent accumulated depreciation and impairment losses.
  - D. The lower of cost or net realizable value.

Answer (C) is **correct**.

Under the revaluation model, if the fair value of an item of property, plant, and equipment can be reliably measured, it must be carried subsequent to initial recognition at a revalued amount. This amount is fair value at the date of the revaluation minus any subsequent accumulated depreciation and impairment losses. The revaluation model is permitted by IFRS, not U.S. GAAP.



- Question: 24** Merry Co. purchased a machine costing \$125,000 for its manufacturing operations and paid shipping costs of \$20,000. Merry spent an additional \$10,000 testing and preparing the machine for use. What amount should Merry record as the cost of the machine?
- A. \$155,000
  - B. \$145,000
  - C. \$135,000
  - D. \$125,000

Answer (A) is **correct**.

The amount to be recorded as the acquisition cost of a machine includes all costs necessary to prepare it for its intended use. Thus, the cost of a machine used in the manufacturing operations of a company includes the cost of testing and preparing the machine for use and the shipping costs. The acquisition cost is \$155,000 (\$125,000 + \$20,000 + \$10,000).

- Question: 25** According to IFRS, which accounting policy may an entity apply to measure investment property in periods subsequent to initial recognition?
- A. Cost model or revaluation model.
  - B. Cost model or fair value model.
  - C. Fair value model only.
  - D. Fair value model or revaluation model.

Answer (B) is **correct**.

An entity may choose either the cost model or the fair value model as its accounting policy. But it must apply that policy to all of its investment property. Under the cost model, investment property is carried at its cost minus any accumulated depreciation and impairment losses. Under the fair value model, investment property is measured at fair value, and gain or loss from a change in its fair value is recognized immediately in profit or loss.

- Question: 26** An expenditure to install an improved electrical system is a

<u>Capital Expenditure</u>	<u>Revenue Expenditure</u>
----------------------------	----------------------------

- |        |     |
|--------|-----|
| A. No  | Yes |
| B. No  | No  |
| C. Yes | No  |
| D. Yes | Yes |

Answer (C) is **correct**.

A betterment (improvement) occurs when a replacement asset is substituted for an existing asset, and the result is increased productivity, capacity, or expected useful life. If the improvement benefits future periods, it should be capitalized.



**Question: 27** Brown Systems began operating January 1 and spent \$900,000 in the first month of operations on the following items:

January advertising campaign	\$ 40,000
Computer equipment	280,000
12-month insurance policy	120,000
January building rent	60,000
January salaries	340,000
Office supplies	10,000
Automobile	30,000
January utilities	20,000
Total	<u>\$ 900,000</u>

The total cash expenditures that should be capitalized as property, plant, and equipment is

- A. \$80,000
- B. \$310,000
- C. \$370,000
- D. \$440,000

Answer (B) is **correct**.

The assets purchased that are capitalized as property, plant, and equipment (PPE) are the computer equipment and automobile. Therefore, PPE is \$310,000 (\$280,000 + \$30,000).



### 3.2 Impairment and Disposal of Long-Lived Assets

**Question 28 :** An entity sells a piece of machinery, for cash, prior to the end of its estimated useful life. The sale price is less than the carrying amount of the asset on the date of sale. The entry that the entity uses to record the sale is

- A.      Cash  
         Accumulated depreciation -- machinery  
         Loss on disposal of machinery  
         Machinery
- B.      Cash  
         Accumulated depreciation -- machinery  
         Gain on disposal of machinery  
         Machinery
- C.      Cash  
         Expense -- disposal of machinery  
         Accumulated depreciation -- machinery  
         Machinery
- D.      Cash  
         Machinery  
         Accumulated depreciation -- machinery  
         Gain on disposal of machinery

Answer (A) is **correct**.

Cash is debited for the amount of the sale proceeds. Machinery and the related accumulated depreciation are eliminated by a credit and a debit, respectively. Because the sale price was less than the carrying amount of the asset on the date of sale, a loss on disposal should be recognized in net income or loss.

**Question 29 :** An entity purchased a machine for \$700,000. The machine was depreciated using the straight-line method and had a residual value of \$40,000. The machine was sold on December 31, Year 1. The accumulated depreciation related to the machine was \$495,000 on that date. The entity reported a gain on the sale of the machine of \$75,000 in its income statement for the fiscal year ending December 31, Year 1. The selling price of the machine was

- A. \$280,000
- B. \$240,000
- C. \$205,000
- D. \$115,000

Answer (A) is **correct**.

The selling price minus the carrying amount of the machine equals the gain or loss on disposal. The carrying amount equals \$205,000 (\$700,000 historical cost – \$495,000 accumulated depreciation). Thus, the selling price was \$280,000 (\$205,000 + \$75,000 gain).



**Question: 30** What is the journal entry recorded upon the sale of an item of property, plant, and equipment (PPE) that was sold for cash in excess of its carrying amount?

- A. No journal entry is required.
- B. Debit cash  
Debit accumulated depreciation  
Debit income on disposal of PPE  
Credit PPE
- C. Debit cash  
Debit PPE  
Credit accumulated depreciation  
Credit income on disposal of PPE
- D. Debit cash  
Debit accumulated depreciation  
Credit PPE  
Credit income on disposal of PPE

Answer (D) is **correct**.

The journal entry to record the sale of an item of PPE for cash in excess of its carrying amount should debit the cash account to record the sale proceeds received. Accumulated depreciation should be eliminated by debiting an amount equal to depreciation accumulated up to the start of the current accounting period plus any depreciation that has accumulated between the start of the current period and the date of disposal. Finally, the PPE account should be credited to eliminate the original cost of the asset. The gain should be recorded as a credit and recognized as income on the income statement.

**Question: 31** An entity sold a depreciable asset in the middle of the fifth year of its estimated 10-year useful life. The original cost of the asset was \$100,000, and it was being depreciated on the straight-line basis. If the asset was sold for \$80,000, the gain on the sale will be

- A. \$20,000
- B. \$25,000
- C. \$30,000
- D. \$35,000

Answer (B) is **correct**.

The gain on the sale is the difference between the sale proceeds and the carrying amount of the asset (its remaining undepriciated cost). Depreciation must be taken up to the time of sale. Assuming that residual value is \$0, annual depreciation is \$10,000 ( $\$100,000 \div 10$  years). Thus, the gain is \$25,000  $\{\$80,000$  sale proceeds  $- [\$100,000$  historical cost  $- (\$10,000 \times 4.5$  years)] $\}$ .

**Question: 32** To determine whether to recognize the impairment of a depreciable fixed asset, a company must compare the

- A. Carrying amount of the asset and the present value of the future cash flows expected to be generated by the asset.
- B. Original cost of the asset and the fair value of the asset.
- C. Carrying amount of the asset and the undiscounted future cash flows expected to be generated by the asset.
- D. Original cost of the asset and the carrying amount of the asset.





Answer (C) is **correct**.

A long-lived asset (asset group) is impaired when its carrying amount is greater than its fair value. However, a loss equal to this excess is recognized for the impairment only when the carrying amount is not recoverable. The carrying amount is not recoverable when it exceeds the sum of the undiscounted cash flows expected from the use and disposition of the asset (asset group).

**Fact Pattern 1 :** Blake Corporation has determined that one of its machines has experienced an impairment in value. However, the company expects to continue to use the asset for another 3 full years because no active market exists for this machine. Selected information on the impaired asset (on the date that impairment was determined to exist) is provided below.

Original cost of the machine	\$22,000
Carrying amount of the machine	20,000
Undiscounted future cash flows expected to be generated by the machine	15,000
Fair value of the machine (determined by calculating the present value of the future cash flows expected to be generated by the machine)	12,000

**Question: 33**

**Refers to Fact Pattern 1**

After recognition of the impairment loss, Blake's carrying amount of the impaired asset will be

- A. \$0
- B. \$12,000
- C. \$14,000
- D. \$15,000

Answer (B) is **correct**.

A long-lived asset (asset group) is impaired when its carrying amount is greater than its fair value. However, a loss equal to this excess is recognized for the impairment only when the carrying amount is not recoverable. The carrying amount is not recoverable when it exceeds the sum of the undiscounted cash flows expected from the use and disposition of the asset (asset group).

The asset is impaired because its carrying amount (\$20,000) exceeds its fair value (\$12,000). This loss (\$20,000 – \$12,000 = \$8,000) is recognized in full because the carrying amount (\$20,000) exceeds the undiscounted cash flows from the asset (\$15,000). Thus, the carrying amount is reduced to \$12,000.

**Question: 34**

**Refers to Fact Pattern 1**

What is the amount of the impairment loss to be recorded by Blake?

- A. \$3,000
- B. \$5,000
- C. \$7,000
- D. \$8,000



Answer (D) is **correct**.

The impairment loss is the difference between the carrying amount and fair value of the asset (\$20,000 – \$12,000 = \$8,000).

**Question: 35** An entity purchased a machine on January 1, Year 1, for \$1,000,000. The machine had an estimated useful life of 9 years and a residual value of \$100,000. The company uses straight-line depreciation. On December 31, Year 4, the machine was sold for \$535,000. The gain or loss that should be recorded on the disposal of this machine is

- A. \$35,000 gain.
- B. \$65,000 loss.
- C. \$365,000 loss.
- D. \$465,000 loss.

Answer (B) is **correct**.

The accumulated depreciation was \$400,000  $\{[(\$1,000,000 \text{ historical cost} - \$100,000 \text{ residual value}) \div 9 \text{ years estimated useful life}] \times 4 \text{ years}\}$ , so the carrying amount was \$600,000 (\$1,000,000 – \$400,000). Thus, the loss was \$65,000 (\$600,000 carrying amount – \$535,000 sales price).

**Question: 36** Which of the following statements is **true** regarding impairment of long-lived assets?

- A. U.S. GAAP requires a one-step impairment test, and IFRS requires a two-step impairment test.
- B. Both IFRS and U.S. GAAP permit reversal of an impairment loss in subsequent periods.
- C. Both IFRS and U.S. GAAP prohibit reversal of an impairment loss in subsequent periods.
- D. Under U.S. GAAP, but not IFRS, reversal of an impairment loss in subsequent periods is prohibited.

Answer (D) is **correct**.

Under IFRS, an impairment loss on an asset may be reversed in subsequent periods if a change in the estimates used to measure the recoverable amount has occurred. But an impairment loss recognized for goodwill must not be reversed. Under U.S. GAAP, a previously recognized impairment loss must not be reversed.



- Question: 37** An entity applies IFRS. On December 31, Year 1, it estimates the following information regarding its headquarters building:
- |                      |           |
|----------------------|-----------|
| Fair value           | \$100,000 |
| Cost to sell         | \$15,000  |
| Value in use         | \$90,000  |
| Residual value       | \$17,000  |
| Net realizable value | \$82,000  |
- According to the information above, what is the recoverable amount of the headquarters building on December 31, Year 1?
- A. \$85,000
  - B. \$90,000
  - C. \$100,000
  - D. \$82,000

Answer (B) is **correct**.

The recoverable amount of an asset is the higher of its fair value minus costs to sell and its value in use. Thus, the recoverable amount is \$90,000 [\$90,000 value in use > (\$100,000 – \$15,000) FV minus costs to sell].

- Question: 38** Testing for possible impairment of a long-lived asset (asset group) that an entity expects to hold and use is required
- A. At each interim and annual balance sheet date.
  - B. At annual balance sheet dates only.
  - C. Periodically.
  - D. Whenever events or changes in circumstances indicate that its carrying amount may not be recoverable.

Answer (A) is **correct**.

An impairment loss is recognized when a long-lived asset's carrying amount exceeds the sum of its undiscounted cash flows. Because the sum of the undiscounted cash flows (\$130,000) exceeds the carrying amount (\$120,000), the carrying amount is recoverable. Thus, no impairment is recognized.

- Question: 40** An impairment loss on a long-lived asset (asset group) to be held and used is reported by a business enterprise in
- A. Discontinued operations.
  - B. Extraordinary items.
  - C. Other comprehensive income.
  - D. Income from continuing operations.



Answer (D) is **correct**.

An impairment loss is included in income from continuing operations before income taxes by a business enterprise (income from continuing operations in the statement of activities by a not-for-profit organization). When a subtotal for “income from operations” is reported, the impairment loss is included.

**Question: 41** Last year, Katt Co. reduced the carrying amount of its long-lived assets used in operations from \$120,000 to \$100,000, in connection with its annual impairment review. During the current year, Katt determined that the fair value of the same assets had increased to \$130,000. Under U.S. GAAP, what amount should Katt record as restoration of previously recognized impairment loss in the current year’s financial statements?

- A. \$0
- B. \$10,000
- C. \$20,000
- D. \$30,000

Answer (A) is **correct**.

A previously recognized impairment loss may not be reversed under U.S. GAAP. Under IFRS, an impairment loss (carrying amount > recoverable amount) on an asset (except goodwill) may be reversed if a change in the estimates used to measure the recoverable amount has occurred. Furthermore, IFRS permit an item of property, plant, and equipment to be carried at a revalued amount if its fair value can be measured reliably. Thus, an increase in excess of the prior carrying amount is permitted by IFRS.

**Question: 42** Under IFRS, an asset is impaired when its carrying amount exceeds its recoverable amount. The recoverable amount of an asset is

- A. The lower of its fair value plus cost to sell or value in use.
- B. The greater of its fair value plus cost to sell or value in use.
- C. The lower of its fair value minus cost to sell or value in use.
- D. The greater of its fair value minus cost to sell or value in use.

Answer (D) is **correct**.

The recoverable amount of an asset is the greater of its fair value minus cost to sell or value in use. Value in use is the present value of the asset’s expected cash flows. The recognized impairment loss is the excess of the asset’s carrying amount over its recoverable amount.



### **3.3 Intangible Assets**

**Question: 43** Which of the following is **not** considered to be an intangible asset?

- A. Goods on consignment.
- B. Patents.
- C. Copyrights.
- D. Trademarks.

Answer (A) is **correct**.

An intangible asset is an identifiable nonmonetary (nonfinancial) asset without physical substance. Inventory is a tangible asset. Thus, goods on consignment are not intangible assets.

**Question: 44** A recognized intangible asset is amortized over its useful life

- A. Unless the pattern of consumption of the economic benefits of the asset is not reliably determinable.
- B. If that life is determined to be finite.
- C. Unless the precise length of that life is not known.
- D. If that life is indefinite but not infinite.

Answer (B) is **correct**.

A recognized intangible asset is amortized over its useful life if that useful life is finite, that is, unless the useful life is determined to be indefinite. The useful life of an intangible asset is indefinite if no foreseeable limit exists on the period over which it will contribute, directly or indirectly, to the reporting entity's cash flows.

**Question: 45** Hansen, Inc., purchased a patent at the beginning of Year 1 for \$22,100 that was to be amortized over 17 years. On July 1 of Year 8, Hansen incurred legal costs of \$11,400 to successfully defend the patent. The amount of amortization expense that Hansen should record for Year 8 is

- A. \$2,500
- B. \$1,971
- C. \$1,900
- D. \$1,300

Answer (C) is **correct**.

Hansen will amortize the cost of the patent on a straight-line basis at the rate of \$1,300 per year ( $\$22,100 \div 17$ ). The costs of a successful legal defense of a patent are capitalized and amortized over the shorter of the remaining legal life or the estimated useful life of the patent. Because the legal costs to defend the patent were incurred when the patent had 9.5 years of life remaining, they will be amortized at a rate of \$1,200 per year ( $\$11,400 \div 9.5$ ). Because Year 8 only includes a half year's depreciation for the legal costs, total amortization expense for that year is \$1,900 ( $\$1,300 + \$600$ ).



**Question: 46** Which of the following costs associated with an internally developed patent should be capitalized?

Research and	Patent
<u>Development</u>	<u>Registration</u>

- A. No Yes
- B. No No
- C. Yes No
- D. Yes Yes

Answer (A) is **correct**.

R&D costs must be expensed as they are incurred. Legal fees and registration fees are excluded from the definition of R&D. Thus, the patent registration fees should be capitalized as a cost associated with an internally developed patent. The patent's R&D costs should have been expensed as they were incurred.

**Question: 47** On July 1, Broadstreet Corporation acquired a patent on its new manufacturing process, which streamlines its production operation. The cost of the patent was \$17,000, and Broadstreet expects that the useful life of the new process will be 10 years, although the legal life of the patent is 17 years. Broadstreet is a calendar-year corporation and is preparing its December 31 Statement of Financial Position. At which amount should the patent be reported at December 31 of the year of acquisition?

- A. \$15,300
- B. \$16,000
- C. \$16,150
- D. \$16,500

Answer (C) is **correct**.

A patent is amortized over the shorter of its useful life or legal life, so annual amortization on this patent is \$1,700 ( $\$17,000 \div 10$  years). The depreciation expense for the year of acquisition is \$850 [ $\$1,700 \times (6 \div 12$  months)]. The patent should therefore be reported at December 31 at \$16,150 ( $\$17,000 - \$850$ ).

**Question: 48** Which of the following expenditures qualifies for asset capitalization?

- A. Cost of materials used in prototype testing.
- B. Costs of testing a prototype and modifying its design.
- C. Salaries of engineering staff developing a new product.
- D. Legal costs associated with obtaining a patent on a new product.

Answer (D) is **correct**.

Patents may be purchased or developed internally. The initial capitalized cost of a purchased patent is normally the fair value of the consideration given, that is, its purchase price plus incidental costs, such as registration and attorney's fees. Internally developed patents are less likely to be capitalized because related R&D costs must be expensed when incurred. Thus, only relatively minor costs can be capitalized, for example, patent registration fees and legal fees.



- Question: 49** During the year just ended, Jase Co. incurred research and development costs of \$136,000 in its laboratories relating to a patent that was granted on July 1. Costs of registering the patent equaled \$34,000. The patent's legal life is 20 years, and its estimated economic life is 10 years. In its December 31 balance sheet, what amount should Jase report for the patent, net of accumulated amortization?
- A. \$32,300
  - B. \$33,150
  - C. \$161,500
  - D. \$165,000

Answer (A) is **correct**.

R&D costs are expensed as incurred. However, legal work in connection with patent applications or litigation and the sale or licensing of patents are specifically excluded from the definition of R&D. Hence, the legal costs of filing a patent should be capitalized. The patent should be amortized over its estimated economic life of 10 years. Amortization for the year equals \$1,700  $[(\$34,000 \div 10) \times (6 \div 12)]$ . Thus, the reported amount of the patent at year end equals \$32,300  $(\$34,000 - \$1,700)$ .

- Question: 50** A purchased patent has a remaining legal life of 15 years. It should be
- A. Expensed in the year of acquisition.
  - B. Amortized over 15 years regardless of its useful life.
  - C. Amortized over its useful life if less than 15 years.
  - D. Amortized over 40 years.

Answer (C) is **correct**.

The amortization period for an intangible asset distinct from goodwill is the shorter of its useful life or the legal life remaining after acquisition.

- Question: 51** Under IFRS, an entity that acquires an intangible asset may use the revaluation model for subsequent measurement only if
- A. The useful life of the intangible asset can be reliably determined.
  - B. An active market exists for the intangible asset.
  - C. The cost of the intangible asset can be measured reliably.
  - D. The intangible asset is a monetary asset.

Answer (B) is **correct**.

An intangible asset is carried at cost minus any accumulated amortization and impairment losses, or at a revalued amount. The revaluation model is similar to that for items of PPE (initial recognition of an asset at cost). However, fair value must be determined based on an active market.

- Question: 52** Legal fees incurred by a company in defending its patent rights should be capitalized when the outcome of litigation is
- |        | Successful | Unsuccessful |
|--------|------------|--------------|
| A. Yes | Yes        |              |
| B. Yes | No         |              |
| C. No  | No         |              |
| D. No  | Yes        |              |



Answer (B) is **correct**.

Legal fees incurred in the successful defense of a patent should be capitalized as part of the cost of the patent and then amortized over its remaining useful life because that useful life is finite. Legal fees incurred in an unsuccessful defense should be expensed as the costs are incurred.

**Question: 53** Gray Co. was granted a patent on January 2, Year 5, and appropriately capitalized \$45,000 of related costs. Gray was amortizing the patent over its estimated useful life of 15 years. During Year 8, Gray paid \$15,000 in legal costs in successfully defending an attempted infringement of the patent. After the legal action was completed, Gray sold the patent to the plaintiff for \$75,000. Gray's policy is to take no amortization in the year of disposal. In its Year 8 income statement, what amount should Gray report as gain from sale of patent?

- A. \$15,000
- B. \$24,000
- C. \$27,000
- D. \$39,000

Answer (B) is **correct**.

The patent was capitalized at \$45,000 in Year 5. Annual amortization of \$3,000 ( $\$45,000 \div 15$  years) for Year 5, Year 6, and Year 7 reduced the carrying amount to \$36,000. The \$15,000 in legal costs for successfully defending an attempted infringement may be capitalized, which increases the carrying amount of the patent to \$51,000 ( $\$36,000 + \$15,000$ ). Accordingly, the gain from the sale is \$24,000 ( $\$75,000 - \$51,000$ ).

**Question: 54** Which of the following assets, if any, acquired this year in an exchange transaction is(are) potentially amortizable?

Goodwill   Trademarks

- A. No   No
- B. No   Yes
- C. Yes   Yes
- D. Yes   No

Answer (B) is **correct**.

Goodwill is tested for impairment at least annually but is never amortized. Trademarks, however, may be amortized but only if they have finite useful lives.

Goodwill should be tested for value impairment at which of the following levels?

**Question: 55**

- A. Each identifiable long-term asset.
- B. Each reporting unit.
- C. Each acquisition unit.
- D. Entire business as a whole.





Answer (B) is **correct**.

The cost of an acquired entity minus the net amount assigned to assets acquired and liabilities assumed is goodwill. Goodwill is not amortized. However, goodwill is assigned to a reporting unit that benefited from the business combination for the purpose of testing impairment. Testing occurs each year at the same time, but different reporting units may be tested at different times. Furthermore, additional testing also may be indicated. Potential impairment of goodwill is deemed to exist only if the carrying amount (including goodwill) of a reporting unit is greater than its fair value. Thus, accounting for goodwill is based on the units of the combined entity into which the acquired entity was absorbed. A reporting unit is an operating segment or one of its components, that is, one level below an operating segment. A component qualifies as a reporting unit if (1) it is a business for which discrete financial information is available, and (2) segment management regularly reviews its operating results. However, similar components are aggregated. These provisions, including the determination of operating segments, apply even if the reporting entity is not required to report segment information.

**Question: 56** A company should recognize goodwill in its balance sheet at which of the following points?

- A. Costs have been incurred in the development of goodwill.
- B. Goodwill has been created in the purchase of a business.
- C. The company expects a future benefit from the creation of goodwill.
- D. The fair market value of the company's assets exceeds the book value of the company's assets.

Answer (B) is **correct**.

Goodwill can be recognized only in a business combination. Goodwill is an asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized.

**Question: 57** Which one of the following statements is **correct** about the reconciliation of U.S. GAAP and International Financial Reporting Standards (IFRS)?

- A. The costs of development must be expensed under U.S. GAAP, but are capitalized under IFRS if they meet specific criteria.
- B. The costs of research must be expensed under U.S. GAAP, but are capitalized under IFRS if they meet specific criteria.
- C. All costs of research and development must be expensed under both U.S. GAAP and IFRS.
- D. Internally generated goodwill may not be capitalized under U.S. GAAP, but it may be capitalized under IFRS.

Answer (A) is **correct**.

Under IFRS, (1) costs incurred during the research phase of an internal project are expensed as incurred since the company cannot demonstrate that an intangible asset exists that will generate probable future economic benefits; and (2) costs incurred during the development phase of an internal project can be capitalized and recognized as an intangible asset if, and only if, the company can demonstrate all of the following:

1. The technical feasibility to complete the intangible asset
2. Its intention to complete and use or sell the intangible asset
3. Its ability to sell or use the intangible asset
4. Availability of resources to complete and use or sell the intangible asset
5. The way in which the asset will generate probable future economic benefits
6. Its ability to reliably measure expenditures attributable to the asset



### 3.4 Leases

- Question: 58** Howell Corporation, a publicly traded corporation, is the lessee in a leasing agreement with Brandon, Inc. to lease land and a building. If the lease contains a bargain purchase option, Howell should record the land and the building as a(n)
- A. Operating lease and capital lease, respectively.
  - B. Capital lease and operating lease, respectively.
  - C. Capital lease but recorded as a single unit.
  - D. Capital lease but separately classified.

Answer (D) is **correct**.

A lessee records a lease as a capital lease if it meets any one of four criteria. Existence of a bargain purchase option is one of these criteria. If a lease involving land and a building contains a bargain purchase option or if the lease transfers ownership to the lessee at the end of its term, the lessee separately capitalizes the land and the building.

#### **Fact Pattern 1:**

On January 1, Plantation Restaurant is planning to enter as the lessee into the two lease agreements described in the columns to the right. Each lease is noncancelable, and Plantation does not receive title to either leased property during or at the end of the lease term. All payments required under these agreements are due on January 1 each year.

Lessor	Hadaway, Inc.	Cutter Electronics
Type of property	Oven	Computer
Yearly rental	\$15,000	\$4,000
Lease term	10 years	3 years
Economic life	15 years	5 years
Purchase option	None	\$3,000
Renewal option	None	None
Fair market value at inception of lease	\$125,000	\$10,200
Unguaranteed residual value	None	\$2,000
Lessee's incremental borrowing rate	10%	10%
Executory costs paid by	Lessee	Lessor
Annual executory costs	\$800	\$500
Present value factor at 10% (of an annuity due)	6.76	2.74



**Question: 59**

**Refers to Fact Pattern 1**

Plantation Restaurant should treat the lease agreement with Hadaway, Inc. as a(n)

- A. Capital lease with an initial asset value of \$101,400.
- B. Operating lease, charging \$14,200 in rental expense and \$800 in executory costs to annual operations.
- C. Operating lease, charging the present value of the yearly rental expense to annual operations.
- D. Operating lease, charging \$15,000 in rental expense and \$800 in executory costs to annual operations.

Answer (D) is **correct**.

The Hadaway lease is an operating lease with a \$15,000 annual rental expense with annual executory costs of \$800 to be paid by the lessee. An operating lease does not transfer the rights and risks of ownership to the lessee. The Hadaway lease is nothing more than a rental arrangement. If any one of the following criteria is met, the lease is a capital lease: the lease transfers title to the lessee, the lease has a bargain purchase option, the lease term is 75% or more of the useful life of the leased asset, or the present value of the minimum lease payments is 90% or more of the asset's fair value. The Hadaway lease meets none of these four criteria.

**Question: 60**

**Refers to Fact  
Pattern 1**

Plantation Restaurant should treat the lease agreement with Cutter Electronics as a(n)

- A. Capital lease with an initial asset value of \$10,960.
- B. Capital lease with an initial asset value of \$10,200.
- C. Operating lease, charging \$3,500 in rental expense and \$500 in executory costs to annual operations.
- D. Capital lease with an initial asset value of \$9,590.

Answer (D) is **correct**.

A capital lease is one in which many of the benefits and risks of ownership are transferred to the lessee. For accounting purposes, the lessee treats a capital lease as similar to the purchase of an asset. If the present value of the minimum lease payments (excluding executory costs) is 90% or more of the asset's fair value, the lease should be accounted for as a capital lease. Given that the executory costs associated with the lease are to be paid by the lessor, a portion of the lease rental price is for those costs, not for the asset. Executory costs include insurance, maintenance, and similar expenses. Consequently, the annual minimum lease payment equals the annual payment minus the executory costs, or \$3,500 (\$4,000 yearly rental – \$500). The present value of the minimum lease payments is therefore \$9,590 ( $\$3,500 \times 2.74$ ), which is greater than 90% of the fair value of the asset. Thus, the lease should be capitalized. The appropriate amount of the initial asset value is the present value of the minimum lease payments calculated above.



**Question: 61** Which of the following statements about a capital lease is **false**?

- A. The lessor capitalizes the net investment in the lease.
- B. The lessor records the leased item as an asset.
- C. The lessee records depreciation or capital cost allowance on the leased asset.
- D. The lease arrangement represents a form of financing.

Answer (B) is **correct**.

When a lease is capitalized, the lessor derecognizes the leased item and records lease payments receivable. The lessee records and depreciates the leased item.

**Question: 62** If a company uses off-balance-sheet financing, assets have been acquired

- A. For cash.
- B. With operating leases.
- C. With financing leases.
- D. With a line of credit.

Answer (B) is **correct**.

With an operating lease, no long-term liability need be reported on the face of the balance sheet.

**Question: 63** Which one of the following statements with respect to leases is **correct**?

- A. An operating lease is treated like a rental contract between the lessor and lessee.
- B. A lease that does not transfer ownership from the lessor to the lessee by the end of the lease is automatically an operating lease.
- C. Sales and direct financing leases pertain more to lessees than lessors.
- D. Unpredictability of lease revenues or expenses can transform what would otherwise be a capital lease for the lessee into an operating lease for the lessee.

Answer (A) is **correct**.

An operating lease is a transaction in which the lessee rents the right to use the lessor's assets without acquiring a substantial portion of the benefits and risks of ownership. Thus, an operating lease is treated like a rental contract between the lessor and lessee.



**Fact Pattern 2:** Neary Company has entered into a contract to lease computers from Baldwin Company starting on January 1, Year 1. Relevant information pertaining to the lease is provided below.

Lease term	4 Years
Useful life of computers	5 Years
Present value of future lease payments	\$100,000
Fair value of leased asset on date of lease	105,000
Baldwin's implicit rate	10%

At the end of the lease term, ownership of the asset transfers from Baldwin to Neary. Neary has properly classified this lease as a capital lease on its financial statements and uses straight-line depreciation on comparable assets.

**Question: 64**

**Refer to Fact Pattern 2** At January 1, Year 1, the lease would be reported on Neary's books as a(n)

- A. Asset only.
- B. Asset and a liability.
- C. Liability only.
- D. Expense and a liability.

Answer (B) is **correct**.

The lease is classified as a capital lease, since the ownership of the leased asset is transferred to the lessee at the end of the lease term. The lessee must record a capital lease as an asset and as an obligation at an amount equal to the present value of the minimum lease payments.

**Question: 65**

**Refer to Fact Pattern 2** What is the annual depreciation expense that Neary will record on the leased computers?

- A. \$20,000
- B. \$21,000
- C. \$25,000
- D. \$26,250

Answer (A) is **correct**.

Under a capital lease, the lessee recognizes a leased asset at an amount equal to the present value of the minimum lease payments (\$100,000). Since the lease provides for the transfer of ownership, Neary should depreciate the computers using the straight-line method over their estimated useful life (5 years). Annual depreciation expense on the computers is \$20,000 ( $\$100,000 \div 5$  years).



- Question: 66** On January 1, Rosewater Company leased a computer for 4 years at a monthly rent of \$80, payable at the end of each month. Due to the rate of technical change, the computer is expected to become obsolete within 5 years. At the inception of the lease, the computer was retailing for \$3,450. Had Rosewater chosen to purchase the computer instead of leasing it, they could have borrowed the funds at 10%. At a 10% interest rate, the present value of the lease payments is \$3,154. Rosewater does not know the rate implicit in the lease. For the month of January, Rosewater should report (to the closest dollar) interest expense of
- A. \$26 and depreciation expense of \$66.
  - B. \$0 and rent expense of \$80.
  - C. \$29 and depreciation expense of \$58.
  - D. \$29 and rent expense of \$80.

Answer (A) is **correct**.

Interest expense will be recognized in the amount of \$26 [ $\$3,154 \times 10\% \times (1 \div 12 \text{ months})$ ]. Since Rosewater does not know the lessor's implicit rate, it is appropriate to use Rosewater's own incremental borrowing rate to determine whether the lease should be classified as a capital lease. Since the present value of the lease payments is greater than 90% of the fair value of the computer ( $\$3,154 \div \$3,450 = 91.4\%$ ), the lease is appropriately classified as a capital lease and Rosewater will recognize depreciation expense. Since the lease agreement neither provides for transfer of ownership nor contains a bargain purchase option, the computers are depreciated over the lease term (4 years). Monthly depreciation expense will be \$66 ( $\$3,154 \div 48 \text{ months}$ ).

- Question: 67** Keller Corporation signed a 3-year lease for an automobile on December 1. The automobile had a list price of \$17,000 and an estimated useful life of 8 years. The lease called for payments of \$500 per month for 36 months. The present value of the \$500 payments was \$15,054 at Keller's incremental borrowing rate and \$15,496 at the lessor's implicit rate, which is known to the lessee. Based on the above information, Keller should record the lease as a(n)
- A. Capital lease.
  - B. Operating lease.
  - C. Sale-leaseback.
  - D. Sales-type lease.

Answer (A) is **correct**.

A lessee must report a lease as a capital lease if the present value of the minimum lease payments (MLP) is at least 90% of the fair value of the asset. If the lessor's implicit rate is known to the lessee, that is the appropriate rate for discounting the MLP. Dividing the present value of the MLP by the list price of the automobile yields a result  $> 90\%$  ( $\$15,496 \div \$17,000 = 91.2\%$ ). Thus, this lease must be classified by Keller as a capital lease.

- Question: 68** Lease M does not contain a bargain purchase option, but the lease term is equal to 90% of the estimated economic life of the leased property. Lease P does not transfer ownership of the property to the lessee by the end of the lease term, but the lease term is equal to 75% of the estimated economic life of the leased property. How should the lessee classify these leases?

- | Lease M            | Lease P         |
|--------------------|-----------------|
| A. Capital lease   | Operating lease |
| B. Capital lease   | Capital lease   |
| C. Operating lease | Capital lease   |
| D. Operating lease | Operating lease |



Answer (B) is **correct**.

For a lease to be classified as a capital lease by the lessee, any one of four criteria must be met. One of these criteria is that the lease term equal 75% or more of the estimated remaining economic life of the leased property. Both leases meet the 75% criterion and should be properly classified as capital leases.

**Question: 69** Bain Co. entered into a 10-year lease agreement for a new piece of equipment worth \$500,000. At the end of the lease, Bain will have the option to purchase the equipment. Which of the following would require the lease to be accounted for as a capital lease?

- A. The lease includes an option to purchase stock in the company.
- B. The estimated useful life of the leased asset is 12 years.
- C. The present value of the minimum lease payments is \$400,000.
- D. The purchase option at the end of the lease is at fair market value.

Answer (B) is **correct**.

A lease is classified as a capital lease by the lessee if, at its inception, any of the following four criteria are satisfied: (1) the lease provides for the transfer of ownership of the leased property, (2) the lease contains a bargain purchase option, (3) the lease term is 75% or more of the estimated economic life of the leased property, or (4) the present value of the minimum lease payments is at least 90% of the fair value of the leased property to the lessor. Because the lease is for  $83 \frac{1}{3}\%$  ( $10 \div 12$ ) of the estimated economic life of the leased property, Bain must capitalize the lease.

**Question: 70** Which of the following is a criterion for a lease to be classified as a capital lease in the books of a lessee?

- A. The lease contains a bargain purchase option.
- B. The lease does not transfer ownership of the property to the lessee.
- C. The lease term is equal to 65% or more of the estimated useful life of the leased property.
- D. The present value of the minimum lease payments is 70% or more of the fair market value of the leased property.

Answer (A) is **correct**.

A lease is classified as a capital lease by the lessee if, at its inception, any of the following four criteria is satisfied: (1) the lease provides for the transfer of ownership of the leased property, (2) the lease contains a bargain purchase option, (3) the lease term is 75% or more of the estimated economic life of the leased property, or (4) the present value of the minimum lease payments (excluding executory costs) is at least 90% of the fair value of the leased property to the lessor.

**Question: 14** Which of the following is a characteristic of a capital lease?

- A. The lease term is substantially less than the estimated economic life of the leased property.
- B. The lease contains a bargain-purchase option.
- C. The present value of the minimum lease payments at the beginning of the lease term is 75% or more of the fair value of the property at the inception of the lease.
- D. The future obligation does not appear in the balance sheet of the lessee.





Answer (B) is **correct**.

A lessee capitalizes a lease that contains a BPO. A lessor capitalizes a lease that contains a BPO if (1) collectibility of the remaining payments is reasonably predictable and (2) no material uncertainties exist regarding unreimbursable costs to be incurred by the lessor.

**Question: 72** The present value of minimum lease payments should be used by the lessee in determining the amount of a lease liability under a lease classified by the lessee as a(n)

	<u>Capital Lease</u>	<u>Operating Lease</u>
--	----------------------	------------------------

- |    |     |     |
|----|-----|-----|
| A. | Yes | Yes |
| B. | Yes | No  |
| C. | No  | No  |
| D. | No  | Yes |

Answer (B) is **correct**.

The lessee must record a capital lease as an asset and an obligation at an amount equal to the present value of the minimum lease payments. Under an operating lease, the lessee records no liability except for rental expense accrued at the end of an accounting period. The accrual is at settlement value rather than present value.

**Question: 73** Koby Co. entered into a capital lease with a vendor for equipment on January 2 for 7 years. The equipment has no guaranteed residual value. The lease required Koby to pay \$500,000 annually on January 2, beginning with the current year. The present value of an annuity due for seven years was 5.35 at the inception of the lease. What amount should Koby capitalize as leased equipment?

- A. \$500,000
- B. \$825,000
- C. \$2,675,000
- D. \$3,500,000

Answer (C) is **correct**.

The lessee records a capital lease as an asset and an obligation at the present value of the minimum lease payments. These payments include the initial payment at the inception of the lease. Thus, the annual payments constitute an annuity due. In the absence of a bargain purchase option, guaranteed residual value, or nonrenewal penalty, the amount capitalized as leased equipment is \$2,675,000 (\$500,000 annual payment × 5.35 present value of an annuity due for 7 years).

**Question: 74** Quick Company's lease payments are made at the end of each period. Quick's liability for a capital lease will be reduced periodically by the

- A. Minimum lease payment less the portion of the minimum lease payment allocable to interest.
- B. Minimum lease payment plus the amortization of the related asset.
- C. Minimum lease payment less the amortization of the related asset.
- D. Minimum lease payment.





Answer (A) is **correct**.

The lease liability consists of the present value of the minimum lease payments. The lease liability is reduced by the portion of the lease payment attributable to the lease liability. This amount is the lease payment less the interest component of the payment. Thus, the liability is decreased by the minimum lease payment each period less the portion of the payment allocable to interest.

**Question: 75** On January 1, Year 4, Harrow Co., as lessee, signed a 5-year noncancelable equipment lease with annual payments of \$100,000 beginning December 31, Year 4. Harrow treated this transaction as a capital lease. The five lease payments have a present value of \$379,000 at January 1, Year 4, based on interest of 10%. What amount should Harrow report as interest expense for the year ended December 31, Year 4?

- A. \$37,900
- B. \$27,900
- C. \$24,200
- D. \$0

Answer (A) is **correct**.

Under the effective-interest method, interest expense for the first year is \$37,900 (\$379,000 lease obligation × 10% effective interest rate).

**Question: 76** On January 2, Cole Co. signed an 8-year noncancelable lease for a new machine, requiring \$15,000 annual payments at the beginning of each year. The machine has a useful life of 12 years with no salvage value. Title passes to Cole at the lease expiration date. Cole uses straight-line depreciation for all of its plant assets. Aggregate lease payments have a present value on January 2 of \$108,000, based on an appropriate rate of interest. For the current year, Cole should record depreciation (amortization) expense for the leased machine at

- A. \$0
- B. \$9,000
- C. \$13,500
- D. \$15,000

Answer (B) is **correct**.

This lease qualifies as a capital lease because title passes to the lessee at the end of the lease term. When a lease is capitalized because title passes to the lessee at the end of the lease term or because the lease contains a bargain purchase option, the depreciation (amortization) period is the estimated economic life of the asset. The asset should be depreciated (amortized) in accordance with the lessee's normal depreciation policy for owned assets. Cole normally uses the straight-line method. Thus, depreciation (amortization) expense is \$9,000 [(\$108,000 leased asset – \$0 salvage value) ÷ 12-year economic life].



**Question: 77** Leases should be classified by the lessee as either operating leases or capital leases. Which of the following statements **best** characterizes operating leases?

- A.** The benefits and risks of ownership are transferred from the lessor to the lessee.
- B.** The lessee records leased property as an asset and the present value of the lease payments as a liability.
- C.** Operating leases transfer ownership to the lessee, contain a bargain purchase option, are for more than 75% of the leased asset's useful life, or have minimum lease payments with a present value in excess of 90% of the fair value of the leased asset.
- D.** The lessor records lease revenue, asset depreciation, maintenance, etc., and the lessee records lease payments as rental expense.

Answer (D) is **correct**.

Operating leases are transactions whereby lessees rent the right to use lessor assets without acquiring a substantial portion of the benefits and risks of ownership of those assets.



### 3.5 Income Taxes

**Question: 78** Which one of the following temporary differences will result in a deferred tax asset?

- A. Use of the straight-line depreciation method for financial statement purposes and the Modified Accelerated Cost Recovery System (MACRS) for income tax purposes.
- B. Installment sale profits accounted for on the accrual basis for financial statement purposes and on a cash basis for income tax purposes.
- C. Advance rental receipts accounted for on the accrual basis for financial statement purposes and on a cash basis for tax purposes.
- D. Investment gains accounted for under the equity method for financial statement purposes and under the cost method for income tax purposes.

Answer (C) is **correct**.

A deferred tax asset records the deferred tax consequences attributable to deductible temporary differences and carryforwards. Advance rental receipts accounted for on the accrual basis for financial statement purposes and on a cash basis for tax purposes would give rise to a deferred tax asset. The financial statements would report no income and no related tax expense because the rental payments apply to future periods. The tax return, however, would treat the rent as income when the cash was received, and a tax would be due in the year of receipt. Because the tax is paid prior to recording the income for financial statement purposes, it represents an asset that will be recognized as an expense when income is finally recorded.

#### **Fact Pattern 1 :**

Bearings Manufacturing Company, Inc. purchased a new machine on January 1, Year 1, for \$100,000. The company uses the straight-line depreciation method with an estimated equipment life of 5 years and a zero salvage value for financial statement purposes, and uses the 3-year, Modified Accelerated Cost Recovery System (MACRS) with an estimated equipment life of 3 years for income tax reporting purposes. Bearings is subject to a 35% marginal income tax rate.

Assume that the deferred tax liability at the beginning of the year is zero and that Bearings has a positive earnings tax position. The MACRS depreciation rates for 3-year equipment are shown below.

Year	Rate
1	33.33%
2	44.45
3	14.81
4	7.41

**Question: 79**  
**refers to Fact**  
**Pattern 1 :**

What is the deferred tax liability at December 31, Year 1 (rounded to the nearest whole dollar)?

- A. \$7,000
- B. \$33,330
- C. \$11,666
- D. \$4,666



Answer (D) is **correct**.

For financial reporting purposes, the reported amount (cost – accumulated depreciation) of the machine at year-end, assuming straight-line depreciation and no salvage value, will be \$80,000 [ $\$100,000 \text{ cost} - (\$100,000 \div 5 \text{ years})$ ]. The tax basis of this asset will be \$66,670 [ $\$100,000 - (\$100,000 \times 33.33\%)$ ]. A taxable temporary difference has arisen because the excess of the reported amount over the tax basis will result in a net future taxable amount over the recovery period. A taxable temporary difference requires recognition of a deferred tax liability. Assuming the 35% rate applies during the asset's entire life, the deferred tax liability equals the applicable enacted tax rate times the temporary difference, or \$4,666 [ $(\$80,000 - \$66,670) \times 35\%$ ].

**Question: 80** On a statement of financial position, all of the following should be classified as current liabilities **except**

- A. Advances from customers for services to be performed.
- B. Salaries payable for work performed during the previous month.
- C. Deferred income taxes for differences based on depreciation methods.
- D. Accounts payable for inventory items to be shipped on consignment.

Answer (C) is **correct**.

Deferred tax amounts are classified as current or noncurrent based on the classification of the related asset or liability (assuming such an asset or liability exists). Because depreciable assets are noncurrent, a deferred tax liability for differences based on depreciation methods is noncurrent.

**Question: 81** A liability that represents the accumulated difference between the income tax expense reported on the firm's books and the income tax actually paid is

- A. Capital gains tax.
- B. Deferred taxes.
- C. Taxes payable.
- D. Value-added taxes.

Answer (B) is **correct**.

Deferred tax liabilities arise when temporary differences in book and taxable income result in future taxable amounts. Deferred tax assets arise when temporary differences in book and taxable income result in future deductible amounts.

**Question: 82** Harrison Corporation entered into a 3-year contract, using the percentage-of-completion method for financial income and the completed contract method for taxable income. Harrison expected the project to be profitable throughout the construction period. The effect on Harrison's financial statements for the third year of this contract would be a(n)

- A. Decrease in the deferred tax asset account.
- B. Decrease in the deferred tax liability account.
- C. Increase in the deferred tax asset account.
- D. Increase in the deferred tax liability account.



Answer (B) is **correct**.

For the first two years of the contract, Harrison reports more revenue for financial reporting purposes than for tax purposes, giving rise to a deferred tax liability. Upon completion of the contract, Harrison reports all the revenue on its tax return, thereby decreasing the deferred tax liability.

**Question: 83** A tax rate other than the current tax rate may be used to calculate the deferred income tax amount on the statement of financial position if a(n)

- A. Future tax rate has been enacted into law.
- B. Future tax rate change is considered more likely than not to occur.
- C. Election has been made to apply past tax rates.
- D. Net operating loss carryback exists.

Answer (A) is **correct**.

A tax rate other than the current tax rate may be used to calculate the deferred income tax amount on the statement of financial position if a future tax rate has been enacted into law.

**Question: 84** Selected financial information for Windham, Inc., for the year just ended is shown below.

Pretax income	\$5,000,000
Interest received on municipal bonds	600,000
Gain on the sale of land reported this	
year but not taxable until next year	1,000,000
Tax rate for all years	40%
Beginning balances:	
Income taxes payable	-0-
Deferred tax liability	\$50,000

The total income tax expense reported on Windham's income statement for the year just ended should be

- A. \$960,000
- B. \$1,360,000
- C. \$1,760,000
- D. \$2,640,000



Answer (C) is **correct**.

Taxable income consists of pretax income adjusted for those items that give rise to tax differences. Taxable income is therefore \$3,400,000 (\$5,000,000 – \$600,000 – \$1,000,000), and current tax expense is \$1,360,000 (\$3,400,000 × 40%). The interest on municipal bonds is a permanent difference because it is tax-exempt, i.e., it is recognized in GAAP income but never in taxable income. Permanent differences have no deferred tax effects. However, the gain on the sale of land is a temporary difference because it is included in GAAP income this year and is included in taxable income in the future. This temporary difference gives rise to a future taxable amount, specifically, a \$400,000 deferred tax liability (\$1,000,000 × 40%). This credit to the deferred tax liability account is balanced by a debit to income tax expense. Total income tax expense for the year is therefore \$1,760,000 (\$1,360,000 current portion + \$400,000 deferred portion).

**Fact Pattern 2 :** Lucas Company computed the following deferred tax balances for the 2 most recent years. Deferred tax assets are considered fully realizable.

	Year 1	Year 2
	<hr/>	<hr/>
Current deferred tax assets	\$3,000	\$10,000
Noncurrent deferred tax assets	6,000	7,000
Current deferred tax liabilities	8,000	9,000
Noncurrent deferred tax liabilities	5,000	14,000

**Question: 85** If Lucas calculates taxable income of \$1,000,000 for Year 2 and is taxed at an effective income tax rate of 40%, how much income tax expense will be reported on Lucas's income statement for Year 2?  
**refers to Fact Pattern 1**

- A. \$400,000
- B. \$402,000
- C. \$404,000
- D. \$406,000

Answer (B) is **correct**.

Deferred tax expense or benefit is the net change during the year in the entity's deferred tax liabilities and assets. It is aggregated with the current tax expense or benefit to determine total income tax expense for the year. The amount of income taxes payable (current tax expense) is \$400,000 (\$1,000,000 × 40%). The deferred tax assets increased by \$8,000 (\$10,000 – \$3,000 + \$7,000 – \$6,000) and the deferred tax liabilities increased by \$10,000 (\$9,000 – \$8,000 + \$14,000 – \$5,000). Thus, Lucas's income tax expense for Year 2 is \$402,000 (\$400,000 current tax expense – \$8,000 increase in the deferred tax assets + \$10,000 increase in the deferred tax liabilities).



Question: 59 What deferred tax amounts will appear on Lucas's statement of financial position at the end of Year 2?

Assets		Liabilities	
Current	Noncurrent	Current	Noncurrent
A. \$0	\$1,000	\$5,000	\$0
B. \$7,000	\$1,000	\$1,000	\$9,000
C. \$1,000	\$0	\$0	\$7,000
D. \$10,000	\$7,000	\$9,000	\$14,000

Answer (C) is **correct**.

Current deferred tax amounts are netted for financial reporting purposes. Likewise, noncurrent amounts are also netted. At the end of Year 2, Lucas nets its \$10,000 of current deferred tax assets and \$9,000 of current deferred tax liabilities for a reported current deferred tax asset of \$1,000. Similarly, the \$7,000 of noncurrent deferred tax assets and \$14,000 of noncurrent deferred tax liabilities are netted to produce a reported noncurrent deferred tax liability of \$7,000.

Question: 87 At the end of its first year in business, Pebbles Corporation reported pretax financial statement income of \$50,000. Included in pretax income were \$10,000 of revenue from installment sales and depreciation expense of \$12,000. On the tax return, \$5,000 of installment sales revenue was reported, and depreciation expense of \$16,000 was deducted. The income tax rate was 40%. Pebbles reports installment sales receivables as current assets. On its year-end statement of financial position, Pebbles should report deferred tax balances of

- A. \$2,000 as a current liability and \$1,600 as a current asset.
- B. \$4,000 as a current asset and \$5,000 as a noncurrent asset.
- C. \$2,000 as a current liability and \$1,600 as a noncurrent liability.
- D. \$4,000 as a noncurrent liability and \$5,000 as a current liability.

Answer (C) is **correct**.

Temporary differences arise when the GAAP basis and the tax basis of an item of income or expense differ. Of the installment sales, all \$10,000 was recognized for financial reporting, but only \$5,000 was recognized for tax purposes, producing a temporary difference of \$5,000. Since this amount will be recognized later for tax purposes than for financial reporting, it constitutes a deferred tax liability in the amount of \$2,000 ( $\$5,000 \times 40\%$ ). The depreciation expense will also result in a deferred tax liability; since more expense was recognized for tax purposes than for GAAP reporting ( $\$16,000 - \$12,000 = \$4,000$ ), a deferred tax liability of \$1,600 ( $\$4,000 \times 40\%$ ) results. A deferred tax asset or liability is classified as current or noncurrent depending on the classification of the related asset or liability. The installment revenue is thus properly classified as current and, since depreciation expense relates to property, plant, and equipment, it is classified as noncurrent.



**Question: 88** Moore Corporation's income tax computations gave rise to the following accounts.

Deferred tax asset -- current                      \$20,000

Deferred tax asset -- noncurrent                      30,000

Deferred tax liability -- current                      10,000

Deferred tax liability -- noncurrent                      80,000

The account(s) relating to Moore's taxes that should appear on the statement of financial position is (are)

- A. A noncurrent deferred tax liability of \$40,000.
- B. A noncurrent deferred tax liability of \$90,000 and a noncurrent deferred tax asset of \$50,000.
- C. A current deferred tax asset of \$10,000 and a noncurrent deferred tax liability of \$50,000.
- D. A current deferred tax asset of \$20,000, a noncurrent deferred tax asset of \$30,000, a current deferred tax liability of \$10,000, and a noncurrent deferred tax liability of \$80,000.

Answer (C) is **correct**.

Current deferred tax amounts are netted for financial reporting purposes. Likewise, noncurrent amounts are also netted. At the end of the year, Moore nets its \$20,000 of current deferred tax assets and \$10,000 of current deferred tax liabilities for a reported current deferred tax asset of \$10,000. Similarly, the \$30,000 of noncurrent deferred tax assets and \$80,000 of noncurrent deferred tax liabilities are netted to produce a reported noncurrent deferred tax liability of \$50,000.

**Question: 89** Intraperiod income tax allocation arises because

- A. Items included in the determination of taxable income may be presented in different sections of the financial statements.
- B. Income taxes must be allocated between current and future periods.
- C. Certain revenues and expenses appear in the financial statements either before or after they are included in taxable income.
- D. Certain revenues and expenses appear in the financial statements but are excluded from taxable income.

Answer (A) is **correct**.

To provide a fair presentation, GAAP require that income tax expense for the period be allocated among continuing operations, discontinued operations, extraordinary items, other comprehensive income, and items debited or credited directly to equity.





- Question: 90** Income-tax-basis financial statements differ from those prepared under GAAP because they
- A. Do not include nontaxable revenues and nondeductible expenses in determining income.
  - B. Include detailed information about current and deferred income tax liabilities.
  - C. Contain no disclosures about capital and operating lease transactions.
  - D. Recognize certain revenues and expenses in different reporting periods.

Answer (D) is **correct**.

Financial statements prepared under the income tax basis of accounting and financial statements prepared under GAAP differ when the tax basis of an asset or a liability and its reported amount in the GAAP-based financial statements are not the same. The result will be taxable or deductible amounts in future years when the reported amount of the asset is recovered or the liability is settled. Thus, certain revenues and expenses are recognized in different periods. An example is subscriptions revenue received in advance, which is recognized in taxable income when received and recognized in financial income when earned in a later period. Another example is a warranty liability, which is recognized as an expense in financial income when a product is sold and recognized in taxable income when the expenditures are made in a later period.

- Question: 91** Temporary differences arise when expenses are deductible for tax purposes

After They Are Recognized in Financial Income	Before They Are Recognized in Financial Income
---	--

- |        |     |
|--------|-----|
| A. No  | No  |
| B. No  | Yes |
| C. Yes | Yes |
| D. Yes | No  |

Answer (C) is **correct**.

A temporary difference exists when (1) the reported amount of an asset or liability in the financial statements differs from the tax basis of that asset or liability, and (2) the difference will result in taxable or deductible amounts in future years when the asset is recovered or the liability is settled at its reported amount. A temporary difference may also exist although it cannot be identified with a specific asset or liability recognized for financial reporting purposes. Temporary differences most commonly arise when either expenses or revenues are recognized for tax purposes either earlier or later than in the determination of financial income.



- Question: 92** When accounting for income taxes, a temporary difference occurs in which of the following scenarios?
- A.** An item is included in the calculation of net income but is neither taxable nor deductible.
  - B.** An item is included in the calculation of net income in one year and in taxable income in a different year.
  - C.** An item is no longer taxable due to a change in the tax law.
  - D.** The accrual method of accounting is used.

Answer (B) is **correct**.

A temporary difference results when the GAAP basis and the tax basis of an asset or liability differ. The effect is that a taxable or deductible amount will occur in future years when the asset is recovered or the liability is settled. But some temporary differences are not related to an asset or liability for financial reporting. Thus, temporary differences occur when revenues or gains, or expenses or losses, are used to calculate net income under GAAP in a year before or after being used to calculate taxable income.



### 3.6 Accounting for Bonds and Noncurrent Notes Payable

- Question: 93** The **best** advantage of a zero-coupon bond to the issuer is that the
- A. Bond requires a low issuance cost.
  - B. Bond requires no interest income calculation to the holder or issuer until maturity.
  - C. Interest can be amortized annually by the APR method and need not be shown as an interest expense to the issuer.
  - D. Interest can be amortized annually on a straight-line basis but is a noncash outlay.

Answer (D) is **correct**.

Zero-coupon bonds do not pay periodic interest. The bonds are sold at a discount from their face value, and the investors do not receive interest until the bonds mature. The issuer does not have to make annual cash outlays for interest. However, the discount must be amortized annually and reported as interest expense.

**Fact Pattern 1 :** On January 1, Evangel Company issued 9% bonds in the face amount of \$100,000, which mature in 5 years. The bonds were issued for \$96,207 to yield 10%, resulting in a bond discount of \$3,793. Evangel uses the effective interest method of amortizing bond discount. Interest is payable annually on December 31.

- Question: 94**  
**refers to Fact Pattern 1** What is the amount of interest Evangel will pay at the end of the first year?
- A. \$8,659
  - B. \$9,000
  - C. \$9,621
  - D. \$10,000

Answer (B) is **correct**.

The annual cash payment is the face amount of the bonds times the stated rate ( $\$100,000 \times 9\% = \$9,000$ ).

- Question: 95** A premium on bonds payable arises when
- A. The semiannual bond interest becomes due.
  - B. The prevailing interest rate after the bond issuance falls below the nominal rate of the bonds.
  - C. The amount received from sale of the bonds at issuance exceeds the face value of the bonds.
  - D. The cost of issuing the bonds is capitalized.



Answer (C) is **correct**.

A premium on bonds payable arises when the amount received from sale of the bonds at issuance exceeds the face value of the bonds. This situation occurs if, at the time the bonds are sold, their stated rate is greater than the current market rate.

**Fact Pattern 2 :** On January 1, Evangel Company issued 9% bonds in the face amount of \$100,000, which mature in 5 years. The bonds were issued for \$96,207 to yield 10%, resulting in a bond discount of \$3,793. Evangel uses the effective interest method of amortizing bond discount. Interest is payable annually on December 31.

**Question: 96**  
**refers to Fact**  
**Pattern 2**

What is the amount of interest expense that should be reported on Evangel's income statement for the second year?

- A. \$8,779
- B. \$9,000
- C. \$9,559
- D. \$9,683

Answer (D) is **correct**.

An amortization schedule for the first 2 years of Evangel's bonds can be prepared as follows:

Year	Beginning Carrying Amount	Times: Effective Rate	Equals: Interest Expense	Minus: Cash Paid	Equals: Discount Amortized	Ending Carrying Amount
1	\$96,207	10%	\$9,621	\$9,000	\$621	\$96,828
2	96,828	10%	9,683	9,000	683	97,510

**Question: 97**  
**refers to Fact**  
**Pattern 2**

What is the amount of Evangel's unamortized bond discount at the end of the first year?

- A. \$621
- B. \$2,452
- C. \$3,172
- D. \$3,793

Answer (C) is **correct**.

Total interest expense for the year equals the carrying amount of the bonds times the effective rate (yield), or \$9,621 (\$96,207 × 10%). Subtracting the cash interest payment from this leaves the amount of discount amortized, or \$621 (\$9,621 – \$9,000). Subtracting this amount from the previous unamortized discount (\$3,793) leaves a remaining unamortized discount at the end of Year 1 of \$3,172.

**Question: 98**  
**refers to Fact**  
**Pattern 2**

The net carrying amount of Evangel's bonds payable at the end of the first year is

- A. \$94,866
- B. \$95,586
- C. \$96,828
- D. \$97,548



Answer (C) is **correct**.

Total interest expense for the year equals the carrying amount of the bonds times the effective rate (yield), or \$9,621 ( $\$96,207 \times 10\%$ ). Subtracting the cash interest payment from this leaves the amount of discount amortized ( $\$9,621 - \$9,000 = \$621$ ). Subtracting this amount from the previous unamortized discount (\$3,793) leaves a remaining unamortized discount at the end of Year 1 of \$3,172. Subtracting this amount from the face amount of the bonds (\$100,000) provides a carrying amount of \$96,828.

**Question: 99**  
**refers to Fact**  
**Pattern 2**

What is the amount of interest expense that should be reported on Evangel's income statement at the end of the first year?

- A. \$8,659
- B. \$9,000
- C. \$9,621
- D. \$10,000

Answer (C) is **correct**.

Total interest expense for the year equals the carrying amount of the bonds times the effective rate (yield), or \$9,621 ( $\$96,207 \times 10\%$ ).

**Question: 100**

On January 1, bonds with a face amount of \$200,000, an 8% annual effective yield, and a 7% annual coupon rate were sold by Thomas Dynamics, Inc., for \$180,000. The bonds pay interest on January 1 and July 1. Using the effective interest method, the company's interest expense for the first 6 months ended July 1 will be

- A. \$7,000
- B. \$7,200
- C. \$14,000
- D. \$14,400

Answer (B) is **correct**.

Total interest expense for the year equals the carrying amount of the bonds times the effective rate (yield), or \$14,400 ( $\$180,000 \times 8\%$ ). Half of this amount is \$7,200.

**Question: 101** Debentures are

- A. Income bonds that require interest payments only when earnings permit.
- B. Subordinated debt and rank behind convertible bonds.
- C. Bonds secured by the full faith and credit of the issuing firm.
- D. A form of lease financing similar to equipment trust certificates.

Answer (C) is **correct**.

Debentures are unsecured bonds. Although no assets are mortgaged as security for the bonds, debentures are secured by the full faith and credit of the issuing firm. Debentures are a general obligation of the borrower. Only companies with the best credit ratings can issue debentures because only the company's credit rating and reputation secure the bonds.



**Question: 102** Which one of the following characteristics distinguishes income bonds from other bonds?

- A. The bondholder is guaranteed an income over the life of the security.
- B. By promising a return to the bondholder, an income bond is junior to preferred and common stock.
- C. Income bonds are junior to subordinated debt but senior to preferred and common stock.
- D. Income bonds pay interest only if the issuing company has earned the interest.

Answer (D) is **correct**.

An income bond is one that pays interest only if the issuing company has earned the interest, although the principal must still be paid on the due date. Such bonds are riskier than normal bonds.

**Question: 103** Serial bonds are attractive to investors because

- A. All bonds in the issue mature on the same date.
- B. The yield to maturity is the same for all bonds in the issue.
- C. Investors can choose the maturity that suits their financial needs.
- D. The coupon rate on these bonds is adjusted to the maturity date.

Answer (C) is **correct**.

Serial bonds have staggered maturities; that is, they mature over a period (series) of years. Thus, investors can choose the maturity date that meets their investment needs. For example, an investor who will have a child starting college in 16 years can choose bonds that mature in 16 years.

**Question: 104** A construction company has signed \$1,000,000 in new contracts. During the current year, 10% of the required work for these contracts was performed. Historically, the controller has recognized revenue when the contract work was completed using the completed contract method. This year, the company's auditors are requiring the new contracts to be recognized under the percentage of completion method. The change in revenue recognition methods will result in a revenue change of

- A. \$0
- B. \$(900,000)
- C. \$100,000
- D. \$1,000,000

Answer (C) is **correct**.

When the outcome of a transaction involving the rendering of services (e.g., a construction project) cannot be estimated reliably, revenue must be recognized only to the extent of the expenses recognized that are recoverable. If it is probable that the entity will recover the transaction costs incurred, revenue is recognized only to the extent of those costs that are expected to be recoverable. Thus, \$100,000, 10% of the \$1,000,000 contract, should be recognized as revenue compared with \$0 of revenue recognized under the completed contract method, since the contract is not fully completed.



### 3.7 Accounting for Pensions

**Question: 105** Visor Co. maintains a defined benefit pension plan for its employees. The service cost component of Visor's pension expense is measured using the

- A. Unfunded accumulated benefit obligation.
- B. Unfunded vested benefit obligation.
- C. Projected benefit obligation.
- D. Expected return on plan assets.

Answer (C) is **correct**.

Service cost is the actuarial present value of benefits attributed by the pension benefit formula to services rendered during the accounting period. It is a component of the projected benefit obligation (PBO). The PBO as of a date is equal to the actuarial present value of all benefits attributed by the pension benefit formula to employee service rendered prior to that date. The PBO is measured using assumptions as to future salary levels.

**Question: 106** Which of the following components must be included in the calculation of pension expense recognized for a period by an employer sponsoring a defined benefit pension plan?

Expected Return  
Interest Cost   on Plan Assets

- A. Yes No
- B. Yes Yes
- C. No Yes
- D. No No

Answer (B) is **correct**.

The required minimum pension expense consists of the following elements:

+ Service cost

+ Interest cost

– Expected return on plan assets

± Amortization of net gain or loss

± Amortization of prior service cost of credit

Pension expense

Thus, both interest cost and expected return on plan assets are components of pension expense.



- Question: 107** The following information pertains to Gali Co.'s defined benefit pension plan for Year 1:
- |  |           |
|--|-----------|
| Fair value of plan assets, beginning of year | \$350,000 |
| Fair value of plan assets, end of year       | 525,000   |
| Employer contributions                       | 110,000   |
| Benefits paid                                | 85,000    |
- In computing pension expense, what amount should Gali use as actual return on plan assets?
- A. \$65,000
  - B. \$150,000
  - C. \$175,000
  - D. \$260,000

Answer (B) is **correct**.

The actual return on plan assets is based on the fair value of plan assets at the beginning and end of the accounting period adjusted for contributions and payments during the period. The actual return for Gali is \$150,000 (\$525,000 – \$350,000 – \$110,000 + \$85,000).

- Question: 108** Interest cost included in the pension expense recognized for a period by an employer sponsoring a defined benefit pension plan represents the
- A. Shortage between the expected and actual return on plan assets.
  - B. Increase in the projected benefit obligation resulting from the passage of time.
  - C. Increase in the fair value of plan assets resulting from the passage of time.
  - D. Amortization of the discount on prior service cost.

Answer (B) is **correct**.

The interest cost component of pension expense is defined as the increase in the PBO resulting from the passage of time.





**Fact Pattern 1 :** Selected financial information for Jory Company for the current year ended December 31 is shown below.

Plan assets at January 1	\$6,000,000
Projected benefit obligation at January 1	5,000,000
Accumulated benefit obligation at January 1	4,000,000
Interest cost	400,000
Service cost	700,000
Actual return on plan assets	500,000
Expected return on plan assets	500,000
Employer's contribution	800,000
Benefits paid to retirees	300,000
Accrued pension cost at January 1	-0-

**Question: 109** Jory's net pension expense for the year ended December 31 is  
**Fact Pattern 1**

- A. \$600,000
- B. \$900,000
- C. \$1,600,000
- D. \$1,900,000

Answer (A) is **correct**.

Jory's net pension expense for the year ended December 31 can be calculated as follows:

Current service cost	\$700,000
Interest cost	400,000
Expected return on plan assets	(500,000)
	<hr/>
Net periodic pension cost	\$600,000



**Question: 110**  
**Fact Pattern 1**

The plan assets at December 31 for Jory should be valued at

- A. \$6,500,000
- B. \$6,800,000
- C. \$7,000,000
- D. \$7,300,000

Answer (C) is **correct**.

The fair value of Jory's plan assets at December 31 can be calculated as follows:

Fair value, January 1	\$6,000,000
Add: Actual return	500,000
Add: Employer contribution	800,000
Less: Retirement benefits paid	(300,000)
	<hr/>
Fair value, December 31	\$7,000,000

**Question: 111**  
**Fact Pattern 1**

Jory's projected benefit obligation at December 31 is

- A. \$5,400,000
- B. \$5,700,000
- C. \$5,800,000
- D. \$6,100,000

Answer (C) is **correct**.

Jory's projected benefit obligation at December 31 can be calculated as follows:

PBO, January 1	\$5,000,000
Add: Current service cost	700,000
Add: Interest cost	400,000
Less: Retirement benefits paid	(300,000)
	<hr/>
PBO, December 31	\$5,800,000



**Fact Pattern 2 :** Brown Industries operates a defined benefit pension plan. Information received from the actuary and the trustee related to the Year 2 pension plan includes the following:

Projected benefit obligation, January 1, Year 2	\$1,889,000
Service cost	105,000
Interest cost	190,000
Retirement benefits paid	182,000
Employer contribution	155,000
Actual return on plan assets	215,000
Amortization of prior service cost	122,000
Amortization of prior-year net pension loss	37,000
Fair value -- pension plan assets, December 31, Year 1	1,825,000

**Question: 112** Brown's Year 2 net pension cost is  
**Fact Pattern 2**

- A. \$190,000
- B. \$239,000
- C. \$454,000
- D. \$299,000

Answer (B) is **correct**.

Assuming that the actual return on plan assets is equal to the expected return, the calculations are:

Current service cost	\$105,000
Interest cost	190,000
Actual return on plan assets	(215,000)
Amortization of prior service cost	122,000
Amortization of prior-year net pension loss	37,000
Net periodic pension cost	<u>\$239,000</u>



**Question: 113**  
**Fact Pattern 2**

The fair value of Brown's plan assets at December 31, Year 2, is

- A. \$1,790,000
- B. \$1,798,000
- C. \$2,005,000
- D. \$2,013,000

Answer (D) is **correct**.

The calculations are:

Fair value, Dec. 31, Year 1	\$1,825,000
Add: Actual return	215,000
Add: Employer contribution	155,000
Less: Retirement benefits paid	(182,000)
	<hr/>
Fair value, Dec. 31, Year 2	\$2,013,000

**Question: 114** Brown's projected benefit obligation at December 31, Year 2, is

- A. \$1,787,000
- B. \$1,969,000
- C. \$2,002,000
- D. \$2,029,000

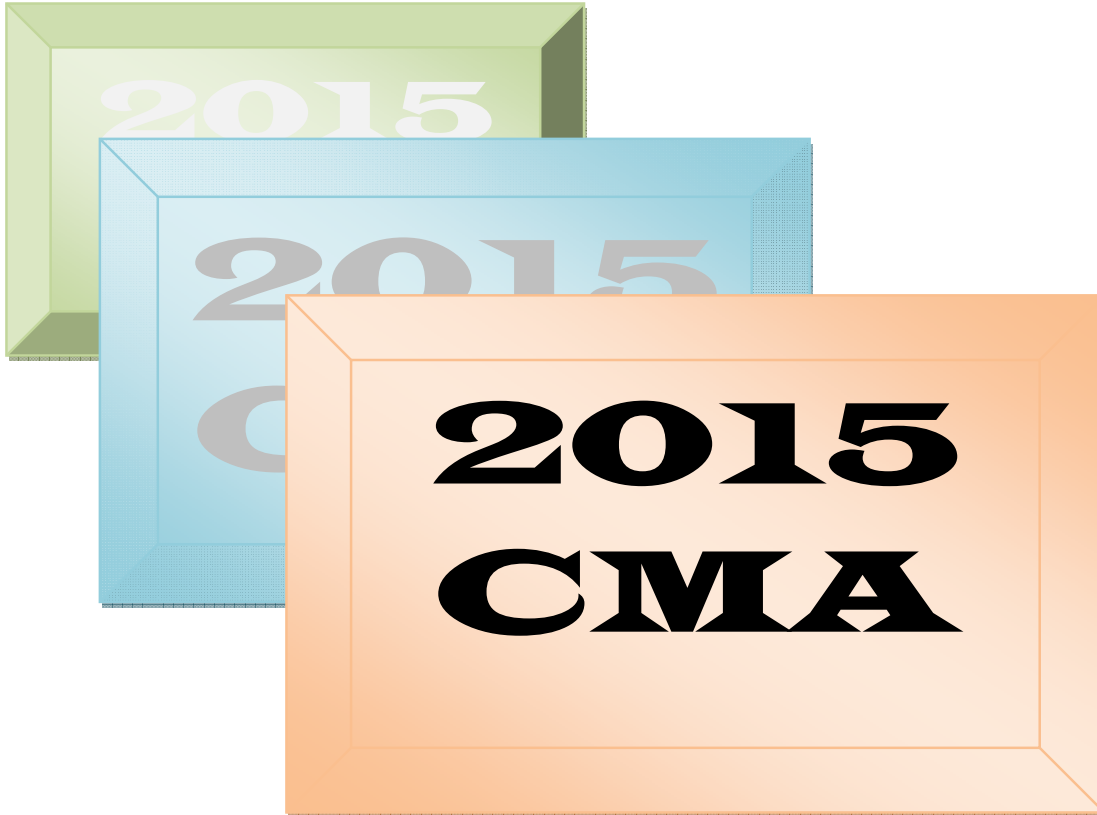
Answer (C) is **correct**.

The calculations are:

PBO, Jan. 1, Year 2	\$1,889,000
Add: Current service cost	105,000
Add: Interest cost	190,000
Less: Retirement benefits paid	(182,000)
	<hr/>
PBO, Dec. 31, Year 2	\$2,002,000



THE AMERICAN UNIVERSITY IN CAIRO  
School of Continuing Education



**Part 1**  
**Financial**  
**Reporting,**  
**Planning,**  
**Performance**  
**and Control**

**Part 1 Financial Reporting, Planning, Performance and Control***(4 hours – 100 questions and 2 essay questions)*

The Part 1 Exam has five sections included in the Learning Outcome Statements. The five sections and their approximate weights on the exam are:

**Sec.A.**  
**15%****External Financial Reporting Decisions****Level C**

Preparation of financial statements: balance sheet, income statement, statement of changes in equity, statement of cash flows; valuation of assets and liabilities; operating and capital leases; impact of equity transactions; revenue recognition; income measurement; major differences between U.S. GAAP and IFRS.

**Sec.B.**  
**30%****Planning, Budgeting and Forecasting****Level C**

Strategic planning process; budgeting concepts; annual profit plans and supporting schedules; types of budgets, including activity-based budgeting, project budgeting, flexible budgeting; top-level planning and analysis; and forecasting, including quantitative methods such as regression and learning curve analysis.

**Sec.C.**  
**20%****Performance Management****Level C**

Factors to be analyzed for control and performance evaluation including revenues, costs, profits, and investment in assets; variance analysis based on flexible budgets and standard costs; responsibility accounting for revenue, cost, contribution and profit centers; key performance indicators; and balanced scorecard.

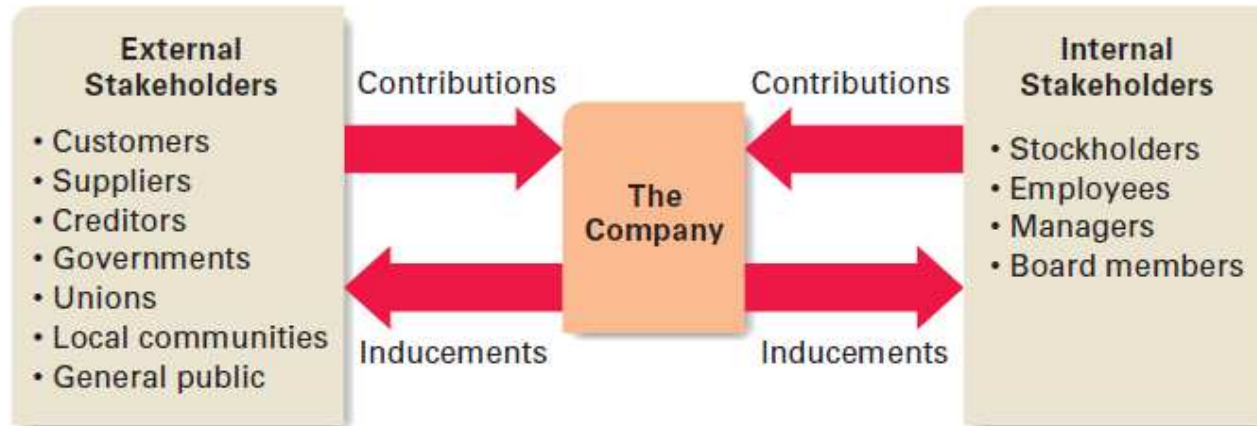
**Sec.D.**  
**20%****Cost Management****Level C**

Cost concepts, flows and terminology; alternative cost objectives; cost measurement concepts; cost accumulation systems including job order costing, process costing, and activity-based costing; overhead cost allocation; supply chain management and business process performance topics such as lean manufacturing, ERP, theory of constraints, value chain analysis, ABM, continuous improvement and efficient accounting processes.

**Sec.E.**  
**15%****Internal Controls****Level C**

Corporate governance; internal control risk; internal control environment, procedures, and standards; responsibility and authority for internal auditing; types of audits; assessing the adequacy of the accounting information system controls; and business continuity planning.

# Stakeholders & the Enterprise



## Stakeholders

Individuals or groups with an interest, claim, or stake in the company, in what it does, and in how well it performs.

## Internal stakeholders

Stockholders and employees, including executive officers, other managers, and board members.

## External stakeholders

All other individuals and groups that have some claim on the company.

Stakeholders are in an exchange relationship with the company. They supply the organization with important resources (or contributions) and in exchange expect their interests to be satisfied (by inducements). A company cannot always satisfy the claims of all stakeholders.

The goals of different groups may conflict. The company must identify the most important stakeholders and give highest priority to pursuing strategies that satisfy their needs.

**Shareholders**

**The owners**

**(the Principal)**

A publicly-owned for-profit company must have maximizing shareholder value as its ultimate goal. The shareholders are the owners. They have provided risk capital with the expectation that the managers will pursue strategies that will give them a good return on their investment. Shareholders want to see profitable growth: high profitability and also sustainable profit growth.

Shareholder value is the returns that shareholders earn as a result of having purchased shares in a company. (HK)

**Shareholders' returns come from both**

Capital appreciation of their  
shares' value

& from dividends received

**Maximizing shareholder returns is accomplished through**

High profitability

& sustained profit  
growth.

**Common shareholders, elect the board of directors (V)**



## The Board of Directors

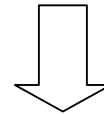
Thus, the members of the board of directors *represent* the owners of the company. The board of directors of a company is responsible for ensuring that the company is operated in the best interest of the shareholders, who are the owners of the company. (HK)

The oversight of the company is ultimately their responsibility. The board, when operating properly, is also an independent check on corporate management to ensure that management acts in the shareholders' best interests. The board of directors sets company-wide policy and advises the CEO and other senior executives, who manage the company's day-to-day activities. In fact, one of the board's most important tasks is hiring, firing, and setting of compensation for the CEO. Boards review and approve **strategy**, significant investments, and acquisitions. The board also oversees operating plans, capital budgets, and the company's financial reports to common shareholders. .(V)

The board's responsibility is to provide governance, guidance and oversight to the management of the company. The board of directors is responsible for overseeing the internal control system.

### The board of directors is the critical link between shareholders and managers (V)

The board of directors ***elects*** the officers of the company and the board of directors is responsible for overseeing the activities of the officers they elect.(HK)



## Management

(the agents of the shareholders)

Thus, managers have an obligation to invest company profits in such a way that shareholder value will be maximized. (Charles)  
Managers carry out three major activities— planning, directing and motivating, and controlling. (next pages discuss the roles of managers). (G).

## Corporate Governance

Corporate governance refers to>>>>

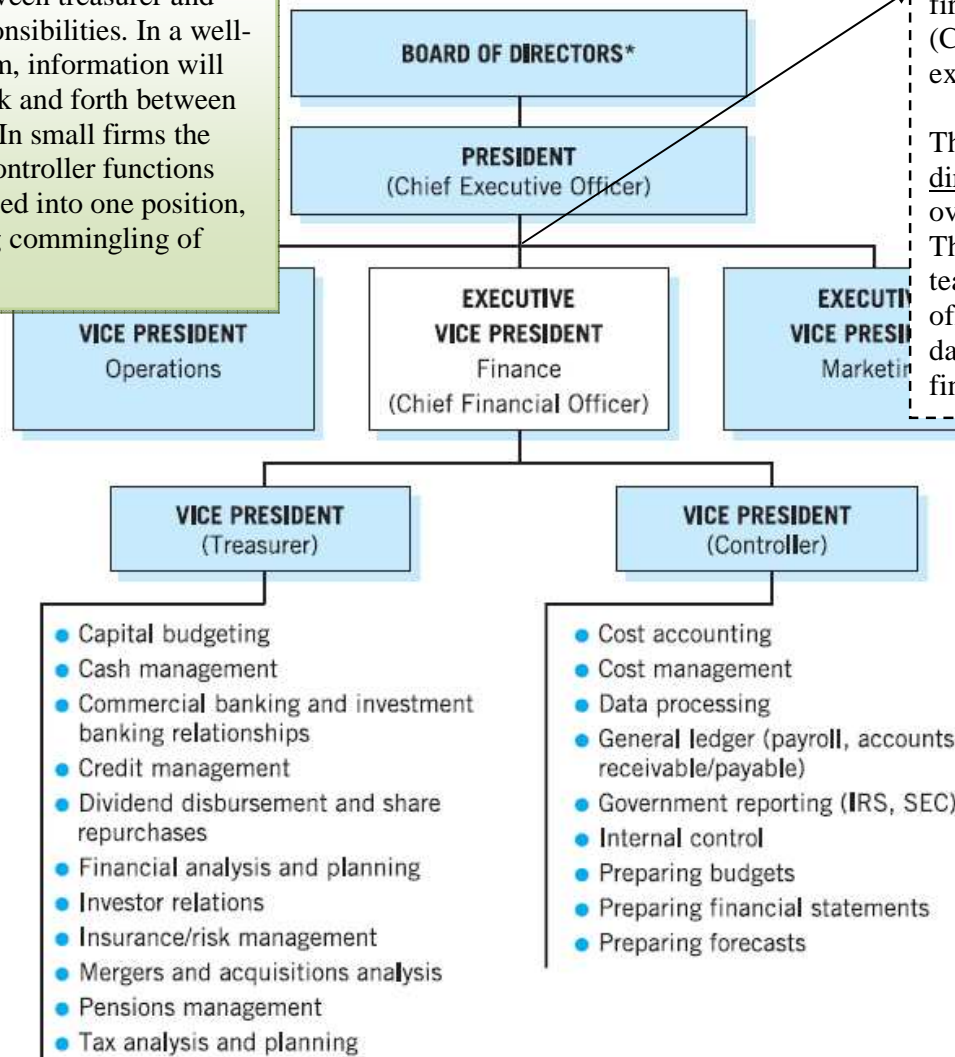
The system by which corporations are managed and controlled. It encompasses the relationships among a company's shareholders, board of directors, and senior management. These relationships provide the framework within which corporate objectives are set and performance is monitored.(V)

The system by which a company is directed and controlled. If properly implemented it should provide incentives for top management to pursue objectives that are in the interests of the company and it should effectively monitor performance. (G)

Governance mechanisms are mechanisms that principals put in place to align incentives between principals and agents and to monitor and control agents. The purpose of governance mechanisms is to reduce the scope and frequency of the agency problem: to help ensure that agents (senior managers) act in a manner that is consistent with the best interests of their principals (stockholders).(Charles)

Three categories of individuals are, thus, key to corporate governance success: first, the **common shareholders**, who elect the board of directors; second, the company's **board of directors** themselves; and, third, the **top executive officers** led by the chief executive officer (CEO).(V)

The organization chart may give you the false impression that a clear split exists between treasurer and controller responsibilities. In a well-functioning firm, information will flow easily back and forth between both branches. In small firms the treasurer and controller functions may be combined into one position, with a resulting commingling of activities.



As the head of one of the three major functional areas of the firm, the vice president of finance, or chief financial officer (CFO), generally reports directly to the president, or chief executive officer (CEO)..(V)

The chief financial officer (CFO)—also called the finance director in many countries—is the executive responsible for overseeing the financial operations of an organization.(H)  
The chief financial officer is a member of the top management team who also occupies a staff position. The chief financial officer (CFO) is responsible for providing timely and relevant data to support planning and control activities and for preparing financial statements for external users.(G)

The **controller** (also called the chief accounting officer) is the financial executive primarily responsible for management accounting and financial accounting.(H)  
The controller's responsibilities are primarily accounting in nature.(V)  
Note: Modern controllers **do not** do any controlling in terms of line authority except over their own departments. Yet the modern concept of controllership maintains that the controller exercises control in a special sense. By reporting and interpreting relevant data, the controller influences the behavior of all employees and exerts a force that impels line managers toward making better-informed decisions as they implement their strategies.(H)

The **treasurer's** responsibilities fall into the decision areas most commonly associated with financial management: investment (capital budgeting, pension management), financing (commercial banking and investment banking relationships, investor relations, dividend disbursement), and asset management (cash management, credit management).(V)

\*In response to heightened concern over shareholders' interests, a growing number of companies have placed shareholders in a box above the board of directors on their organization chart.

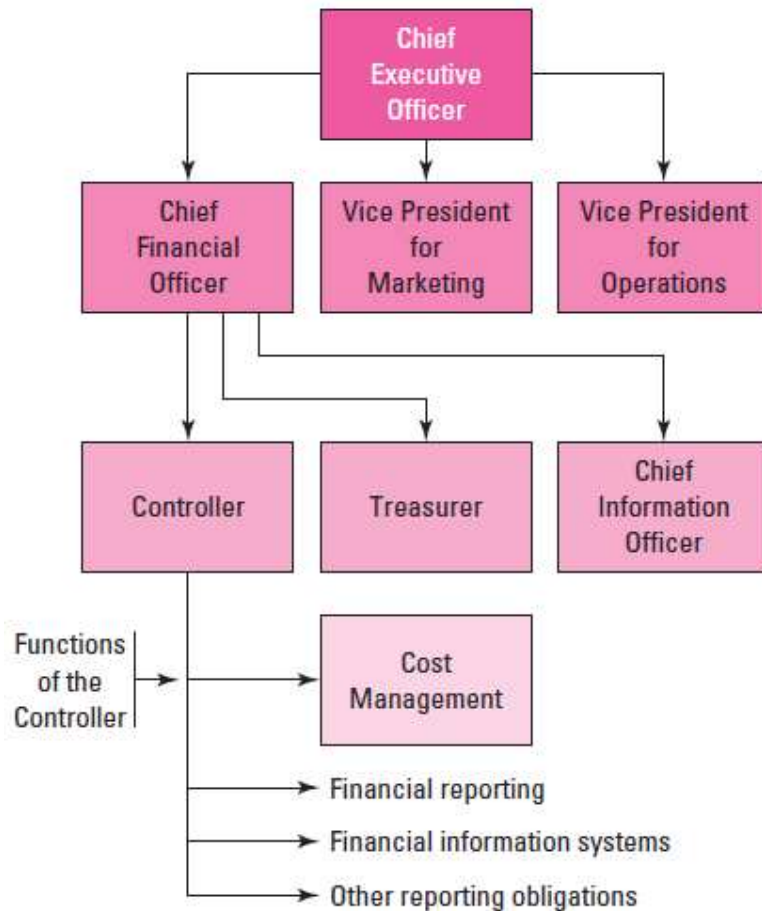
## **Management Accounting and the Role of Cost Management**

Management accountants are the accounting and finance professionals who develop and use cost management information to assist in implementing the organization's strategy. (Blocher).

**Management accounting** is a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy (Blocher).

### **Reporting lines**

In a typical organization (illustrated in below Exhibit) management accountants report to the controller, a key accounting professional in the firm. The controller, assisted by management accountants, has a wide range of responsibilities, including cost management, financial reporting, maintaining financial information systems, and other reporting functions. The chief financial officer (CFO) has the overall responsibility for the financial function; the treasurer manages investor and creditor relationships, and the chief information officer (CIO) manages the firm's use of information technology, including computer systems and communications (Blocher).





### Financial Reporting Function

In contrast to the cost management function, the financial reporting function involves preparing financial statements for external users such as investors and government regulators. These financial accounting reports require compliance with certain external requirements. Cost management information is developed for use within the firm to facilitate management and is not required to meet those requirements.

The main focus of **cost management** information therefore must be *usefulness* and *timeliness*

The focus of **financial reports** must be *accuracy* and *compliance* with reporting requirements

*However, strict adherence to accuracy can compromise the usefulness and timeliness of the information. The function of the financial systems department is to develop and maintain the financial reporting system and related systems such as payroll, financial security systems, and tax preparation. The challenge for the controller is to reconcile these different and potentially conflicting roles. (Blocher).*

## Financial Accounting, Management Accounting, and Cost Accounting

**Financial accounting.** Measures and records business transactions and provides financial statements that are based on **generally accepted accounting principles** (GAAP). It focuses on reporting to external parties such as investors and banks. (Horngren)

The phase of accounting concerned with providing information to stockholders, creditors, and others outside the organization. (Garrison,)

As you note in previous definition and as many of you have already seen in your financial accounting class, accounting systems take economic events and transactions, such as sales and materials purchases, and process the data into information helpful to managers, sales representatives, production supervisors, and others. Processing any economic transaction means collecting, categorizing, summarizing, and analyzing.

Accounting systems provide the information found in the income statement, the balance sheet, the statement of cash flow, and in performance reports, such as the cost of serving customers or running an advertising campaign.

Managers use accounting information to administer the activities, businesses, or functional areas they oversee and to coordinate those activities, businesses, or functions within the framework of the organization. Understanding this information is essential for managers to do their jobs. (Horngren)

***Individual managers often require the information in an accounting system to be presented or reported differently.*** (Horngren)

Many companies are building their own Enterprise Resource Planning (ERP) systems, single databases that collect data and feed it into applications that support the company's business activities, such as purchasing, production, distribution, and sales.



## Financial accounting and management accounting have different goals.

**Financial accounting** focuses on reporting to external parties such as investors, government agencies, banks, and suppliers. It measures and records business transactions and provides financial statements that are based on generally accepted accounting principles (GAAP). The most important way that financial accounting information affects managers' decisions and actions is through compensation, which is often, in part, based on numbers in financial statements.

(Hornigren)

**Financial accounting** is concerned with providing information to stockholders, creditors, and others who are outside the organization. (Garrison,)

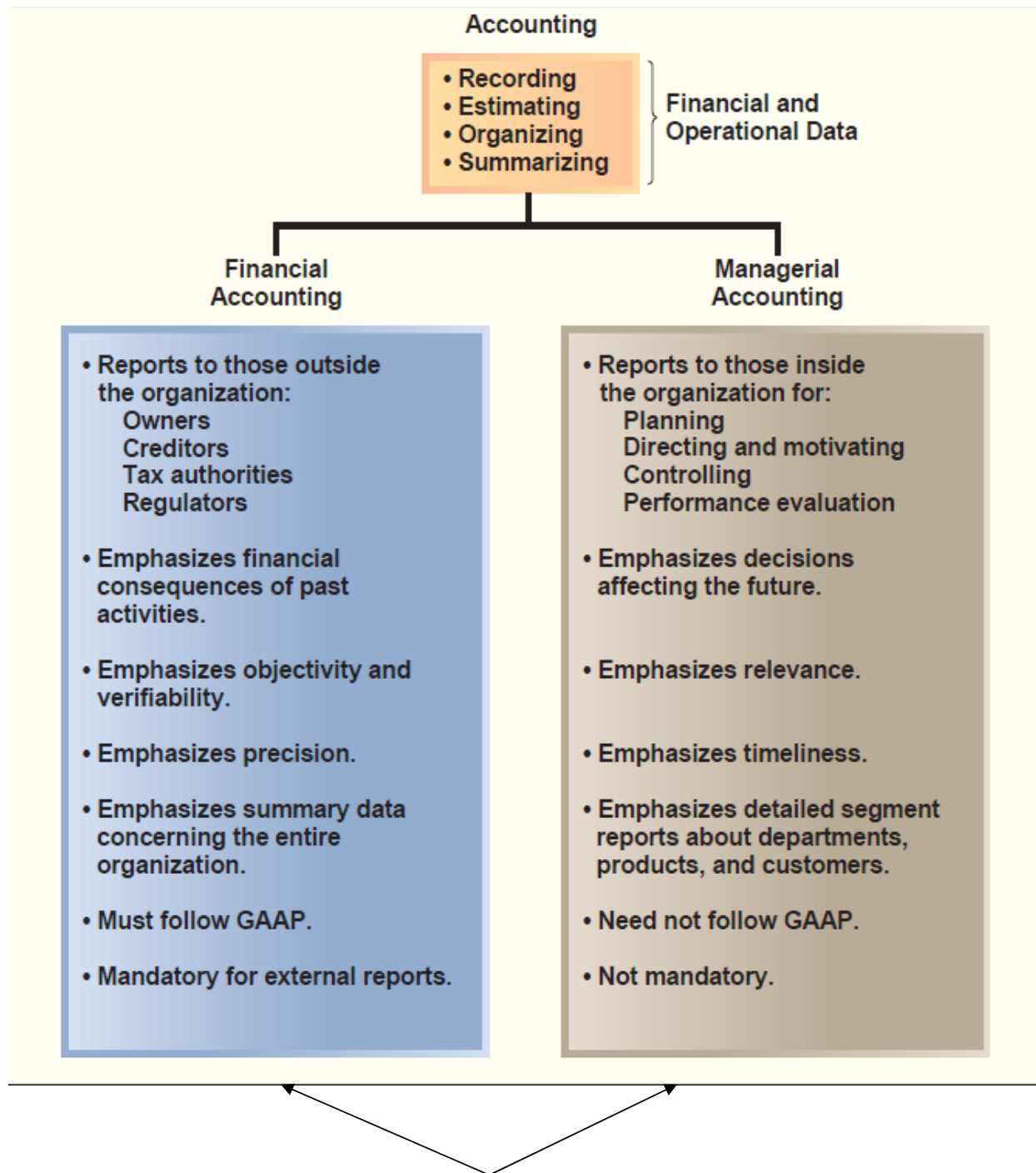
**Management accounting** measures, analyzes, and reports financial and nonfinancial information that helps managers make decisions to fulfill the goals of an organization. Managers use management accounting information to develop, communicate, and implement strategy. They also use management accounting information to coordinate product design, production, and marketing decisions and to evaluate performance. (Hornigren)

**Managerial accounting** is concerned with providing information to managers—that is, the people inside an organization who direct and control its operations. (Garrison,)

## Major Differences Between Management and Financial Accounting

	Management Accounting	Financial Accounting
Purpose of information	Help managers make decisions to fulfill an organization's goals	Communicate organization's financial position to investors, banks, regulators, and other outside parties
Primary users	Managers of the organization	External users such as investors, banks, regulators, and suppliers
Focus and emphasis	Future-oriented (budget for 2011 prepared in 2010)	Past-oriented (reports on 2010 performance prepared in 2011)
Rules of measurement and reporting	Internal measures and reports do not have to follow GAAP but are based on cost-benefit analysis	Financial statements must be prepared in accordance with GAAP and be certified by external, independent auditors
Time span and type of reports	Varies from hourly information to 15 to 20 years, with financial and nonfinancial reports on products, departments, territories, and strategies	Annual and quarterly financial reports, primarily on the company as a whole
Behavioral implications	Designed to influence the behavior of managers and other employees	Primarily reports economic events but also influences behavior because manager's compensation is often based on reported financial results





### **Role of Cost Accounting**

Cost accounting provides information for management accounting and financial accounting.

**Cost accounting** measures, analyzes, and reports financial and nonfinancial information relating to the costs of acquiring or using resources in an organization.

For example, calculating the cost of a product is a cost accounting function that answers financial accounting's inventory-valuation needs and management accounting's decision-making needs (such as deciding how to price products and choosing which products to promote). . (Homgren)



## Cost Management

The ICMA replace the term “cost accounting” with the term “cost management”, but as Horngren say: unfortunately, that term has no uniform definition. We use **cost management** to describe the approaches and activities of managers to use resources to increase value to customers and to achieve organizational goals.

On the other hand Blocher’s definitions are: Cost management information consists of **financial** information about costs and revenues, and **nonfinancial** information about customer retention, productivity, quality, and other key success factors for the organization. **Cost management** is the development and use of cost management information.

- Cost management decisions include decisions such as whether to enter new markets, implement new organizational processes, and change product designs.
- Information from accounting systems helps managers to manage costs, but the information and the accounting systems themselves are not cost management.
- Cost management has a broad focus and is not only about reduction in costs.
- Cost management includes decisions to incur additional costs, for example to improve



## The Four Functions of Management

Management accounting information plays a vital role in the basic management activities—but most particularly in the planning and control functions.

Management accountants contribute to strategic decisions by providing information about the sources of competitive advantage (H).

The management accountant develops cost management information for the CFO, other managers, and employee teams to use to manage the firm and make the firm more competitive and successful. Cost management information is provided for each of the four major management functions:

- 1. Strategic Management.** Cost management information is needed to make sound strategic decisions regarding choice of products, manufacturing methods, marketing techniques and channels, assessing customer profitability and other long-term issues.
- 2. Planning and Decision Making.** Cost management information is needed to support recurring decisions regarding replacing equipment, managing cash flow, budgeting raw materials purchases, scheduling production, and pricing.
- 3. Management and Operational Control.** Cost management information is needed to provide a fair and effective basis for identifying inefficient operations and to reward and motivate the most effective managers.
- 4. Preparation of Financial Statements.** Cost management information is needed to provide accurate accounting for inventory and other assets, in compliance with reporting requirements, for the preparation of financial reports and for use in the three other management functions.





### **Strategic Management:**

The most important function is strategic management, which is the development and implementation of a sustainable competitive position in which the firm's competitive advantage provides continued success.

**A strategy** is a set of goals and specific action plans that, if achieved, provide the desired competitive advantage. Strategic management involves identifying and implementing these goals and action plans.

*Covered in Section B. Part one.*

### **Planning & decision making**

Next, management is responsible for planning and decision making, which involve budgeting and profit planning, cash flow management, and other decisions related to the firm's operations, such as deciding when to lease or buy a facility, when to repair or replace a piece of equipment, when to change a marketing plan, and when to begin development of a new product.

*Covered in Section B. Part one. & Section C Part two.*

**Management accounting information plays a vital role in these basic management activities—but most particularly in the planning and control functions.**

### **Control**

The third area of responsibility, control, consists of two functions, operational control and management control.

**Operational control** takes place when mid-level managers (e.g., site managers, product managers, regional managers) monitor the activities of operating-level managers and employees (e.g., production supervisors and various department heads).

In contrast, **management control** is the evaluation of mid-level managers by upper-level managers (the controller or the CFO).

*Covered in Section C. Part one.*

In the fourth function, **preparation of financial statements**, management complies with the reporting requirements of relevant groups (such as the Financial Accounting Standards Board) and relevant federal government authorities (for example, the Internal Revenue Service and the Securities and Exchange Commission). The financial statement preparation role has recently received a renewed focus as countries throughout the world have adopted International Financial Reporting Standards (IFRS), and the United States is expected to adopt these standards by 2014. The financial statement information also serves the other three management functions, because this information is often an important part of planning and decision making, control, and strategic management

*Covered in Section A. Part one.*



## The Work of Management and the Need for Managerial Accounting Information

Every organization—large and small—has managers. Someone must be responsible for formulating strategy, making plans, organizing resources, directing personnel, and controlling operations. (G) planning, Managers everywhere, carry out three major activities, planning, directing and motivating, and controlling.

**Planning** involves establishing a basic strategy, selecting a course of action, and specifying how the action will be implemented.(G)

**Planning** comprises selecting organization goals and strategies, predicting results under various alternative ways of achieving those goals, deciding how to attain the desired goals, and communicating the goals and how to achieve them to the entire organization.(H)

The most important planning tool when implementing strategy is a **budget**. A budget is the quantitative expression of a proposed plan of action by management and is an aid to coordinating what needs to be done to execute that plan. (H)

Management accountants serve as business partners in these planning activities because of their understanding of what creates value and the key success factors.(H) Companies' management accountants will collect, analyze, and summarize these data in the form of budgets.(G)

**Directing and motivating** involves mobilizing people to carry out plans and run routine operations.(G)

**Controlling** involves ensuring that the plan is actually carried out and is appropriately modified as circumstances change.(G)

**Control** comprises taking actions that **implement** the planning decisions, deciding how to **evaluate performance**, and providing **feedback** and **learning** to help future decision making. (H)

**Measuring actual performance** informs managers how well they and their subunits are doing. (H)

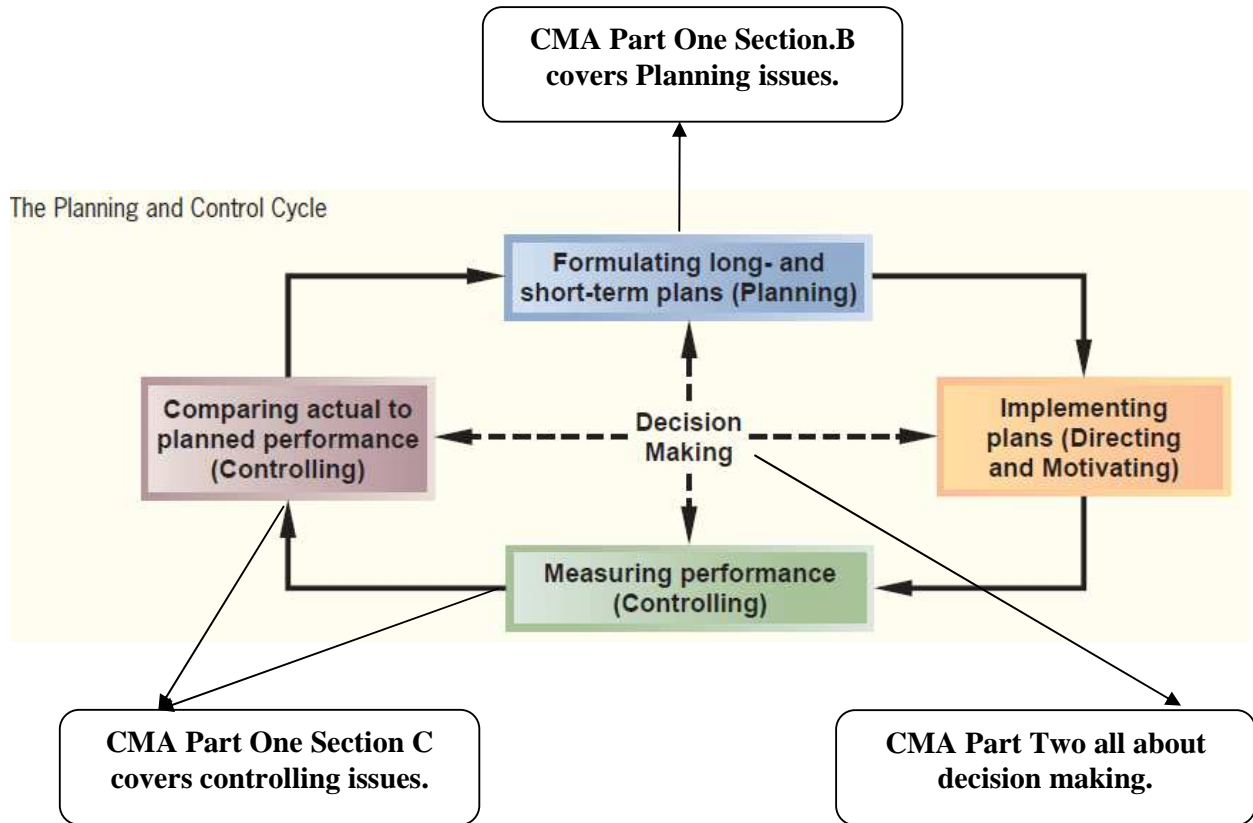
A **budget** serves as much as a **control** tool as a planning tool. Why? Because a budget is a benchmark against which actual performance can be compared.. (H)

The performance report spurs investigation and learning. Learning can lead to changes in goals, changes in strategies, changes in the ways decision alternatives are identified, changes in the range of information collected when making predictions, and sometimes changes in managers.

The performance report in would prompt the management accountant to raise several questions directing the attention of managers to problems and opportunities.(H) As we shall see in later chapters, one of the central purposes of managerial accounting is to provide this kind of **feedback** to managers.(G)

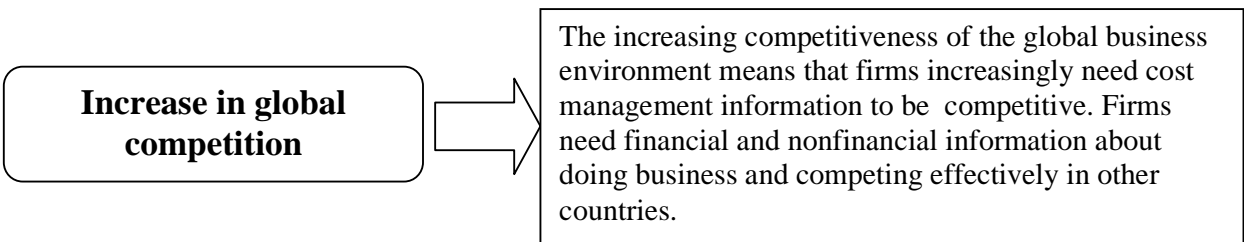
## The Planning and Control Cycle

Below exhibit depicts the work of management in the form of the *planning and control cycle*. The **planning and control cycle** involves the smooth flow of management activities from planning through directing and motivating, controlling, and then back to planning again. All of these activities involve decision making, which is the hub around which the other activities revolve.(G)



## Changes in business environment affects cost management practices (B).

*Primary changes are:*





### Lean manufacturing

ICMA 2015 NEW Topic  
covered in Section D.4.  
Part One.

To remain competitive in the face of the increased global competition, firms around the world are adopting new manufacturing technologies.

- Just-in-time inventory methods
- use of quality teams and statistical quality control.
- flexible manufacturing techniques developed to reduce setup times and allow fast turnaround of customer orders.

### Advances in information technologies

The increasing use of information technology, the Internet, and performance management systems, have fostered the growing strategic focus in cost management by reducing the time required for processing transactions and by expanding the individual manager's access to information within the firm, the industry, and the business environment around the world.

### Greater focus on the customer

Producing value for the customer changes the orientation of managers from low-cost production of large quantities to quality, service, timeliness of delivery, and the ability to respond to the customer's desire for specific features. Today many of the **critical success factors** (discussed in **CMA** Part one Sec.C) are customer oriented. Cost management practices are also changing; cost management reports now include specific measures of customer.

### New forms of management organization

Because of the focus on customer satisfaction and value, the emphasis has shifted from financial and profit-based measures of performance to **customer-related, nonfinancial performance measures** such as quality, time to delivery, and service. (discussed in **CMA** Part one Sec.C) , cost management practices are also changing to include reports that are useful to cross-functional teams of managers; the reports reflect the multifunctional roles of these teams and include a variety of operating and financial information: product quality, unit cost, customer satisfaction, and production bottlenecks, (discussed in **CMA** Part one Sec.C & D)



The competitive firm incorporates the previous emerging and anticipated changes in the contemporary environment of business into its business planning and practices.(B)

Guided by strategic thinking, the **management accountant** focuses on the factors that make the company successful rather than relying only on costs and other financial measures. Cost management focuses not on the measurement per se but on the *identification* of those measures that are critical to the firm's success. Covered on CMA Part one Sec.C (B)

This requires the identification of the firm's critical success factors and the use of analytical, forward-looking decision support. **Critical success factors (CSFs)** are measures of those aspects of the firm's performance essential to its competitive advantage and, therefore, to its success. Many of these critical success factors are *financial*, but many are *nonfinancial*. The CSFs for any given firm depend on the nature of the competition it faces.



Note: 2015 CMA LOS replace LOS m. ~~define critical success factors and discuss the importance of these factors in evaluating a firm,~~ with new one 1. [define key performance indicators \(KPIs\) and discuss the importance of these indicators in evaluating a firm](#)



## Contemporary Management Techniques: The Management Accountant's Response to the Contemporary Business Environment

Management accountants, guided by a strategic focus, have responded to the previous changes in the contemporary business environment with **13 methods** that are useful in implementing strategy in these dynamic times.(B)

The first **six** methods focus directly on strategy implementation

1. The balanced scorecard/strategy map (*CMA P1.Sec.C*),
2. Value chain (*CMA P1.Sec.D*),
3. Activity-based costing (*CMA P1.Sec.D*),
4. Business intelligence,
5. Target costing(*CMA P2.Sec.C*), and
6. Life-cycle costing (*CMA P1.Sec.D*).

The next **seven** methods help to achieve strategy implementation through a focus on process improvement

7. Benchmarking (*CMA P1.Sec.D*),
8. Business process improvement (*CMA P1.Sec.D*),
9. Total quality management ,
10. Lean accounting (*CMA P1.Sec.D*),
11. The theory of constraints (*CMA P1.Sec.D*),
12. Enterprise sustainability, and
13. Enterprise risk management (*CMA P2.Sec.D*).

Majority of the previous methods will be discussed in detail during our course but we can go through Horngren, Blocher and Garrison's definition to gain more insights in those topics.

### The Balanced Scorecard (BSC) and Strategy Map

The balanced scorecard is an **accounting report** that includes the firm's **critical success factors** in four areas:

- (1) financial performance,
- (2) customer satisfaction,
- (3) internal processes, and
- (4) learning and growth.(B)

The balanced scorecard is a framework for implementing strategy that translates an organization's mission and strategy into a set of performance measures.(H)

A balanced scorecard consists of an integrated set of performance measures that are derived from and support the company's strategy. A strategy is essentially a theory about how to achieve the organization's goals.(G)

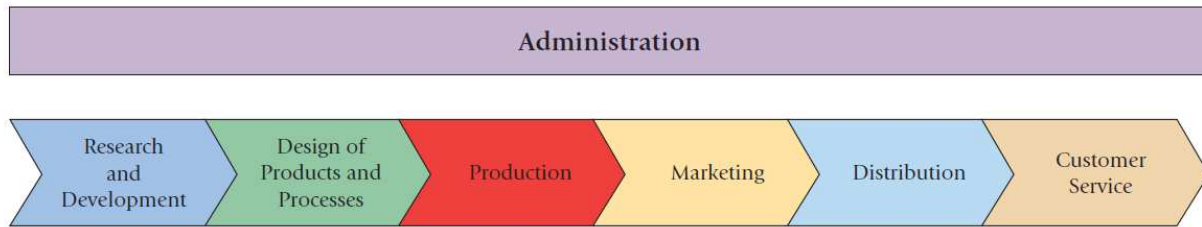
The strategy map is a method, based on the balanced scorecard, that links the four perspectives in a cause-and-effect diagram.

### The Value Chain

The value chain is an analysis tool organizations use to identify the specific steps required to provide a competitive product or service to the **customer**. (B)

Value chain is the sequence of business functions in which **customer usefulness** is added to products.(H)

Value chain: The major business functions that **add value to a company's products and services** such as research and development, product design, manufacturing, marketing, distribution, and customer service

**Different Parts of the Value Chain**

\*Administrative function, which includes functions such as accounting and finance, human resource management, and information technology, that support the six primary business functions.

Managers track the costs incurred in each value-chain category. Their goal is to **reduce costs** and to **improve efficiency**.

Management accounting information helps managers **make cost-benefit tradeoffs**. For example, is it cheaper to buy products from outside vendors or to do manufacturing in-house? How does investing resources in design and manufacturing reduce costs of marketing and customer service?

**Activity-Based Costing and Management**

Many firms have found that they can improve planning, product costing, operational control, and management control by using **activity analysis** to develop a detailed description of the specific activities performed in the firm's operations. The activity analysis provides the basis for activity-based costing and activity-based management.(B)

Activity-based costing (ABC) is used to **improve the accuracy** of cost analysis by improving the **tracing** of costs to products or to individual customers. (B)

Activity-based costing (ABC). Approach to costing that focuses on individual activities as the fundamental cost objects. It uses the costs of these activities as the basis for assigning costs to other cost objects such as products or services.(H)

Activity-based costing (ABC): A costing method based on activities that is designed to **provide managers with cost information** for strategic and other decisions that potentially affect capacity and therefore fixed as well as variable costs.(G)

Activity-based management (ABM) uses activity analysis and activity-based costing to help managers **improve the value** of products and services, and to **increase the organization's competitiveness**.(B)

Activity-based management (ABM). Method of management decision-making that uses activity-based costing information to **improve customer satisfaction and profitability**.(H)

Activity-based management (ABM) A management approach that focuses on managing activities as a way of **eliminating waste and reducing delays and defects**. (G)

ABC and ABM are key strategic tools for many firms, especially those with complex operations, or diversity of products and services.





### Business Intelligence

Business intelligence (also called business analytics or predictive analytics) is an approach to strategy implementation in which the management accountant uses data to understand and analyze business performance.

### Target Costing

Target costing is a method that has resulted directly from the intensely competitive markets in many industries such as cameras and automobiles.(B)

Target costing determines the **desired cost** for a product on the basis of **a given competitive price**, such that the product will earn a desired profit. Cost is thus determined by price. (B)

Target costing is the process of determining the **maximum allowable cost** for a new product and then developing a **prototype** that can be profitably made for that maximum target cost figure.(G)

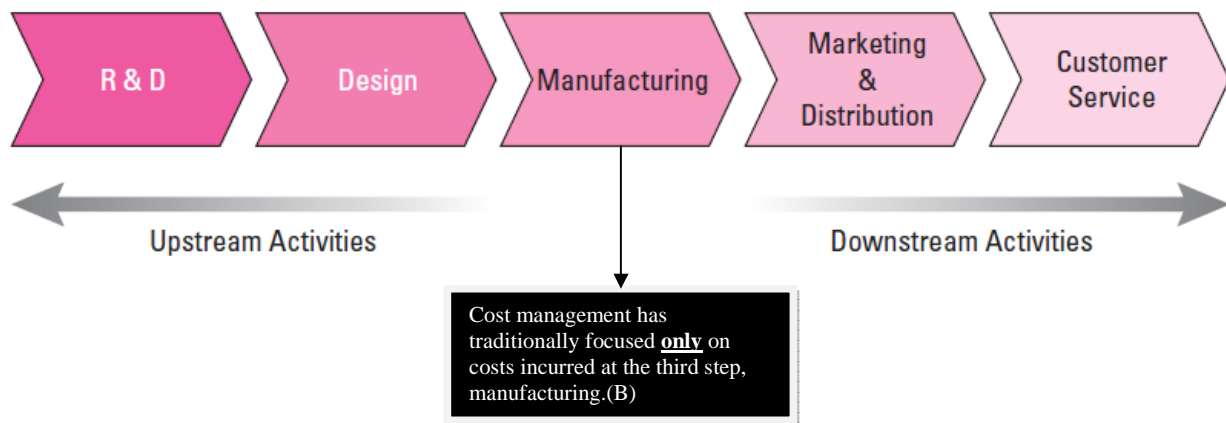
The firm using target costing must often adopt **strict cost reduction** measures or redesign the product or manufacturing process to meet the market price and remain profitable.(B)

$$\text{Target cost} = \text{Anticipated selling price} - \text{Desired profit}$$

### Life-Cycle Costing

Life-cycle costing is a method to identify and monitor the costs of a product throughout its life cycle. The life cycle consists of all steps from product design and purchase of raw materials to delivery and service of the finished product.(B)

Life-cycle costing: System that tracks and accumulates business function costs of the ***value chain*** attributable to each product from initial R&D to final customer service and support.(H)



Thinking strategically, management accountants now manage the product's **full** life cycle of costs, including upstream and downstream costs as well as manufacturing costs. This expanded focus means careful attention to product design, since design decisions **lock** in most subsequent life-cycle costs.(B)





### **Benchmarking**

Benchmarking is a process by which a firm:

Identifies its critical success factors,

**Benchmarking.** The continuous process of comparing the levels of performance in producing products and services and executing activities against the best levels of performance in competing companies or in companies having similar processes.(H)

Studies the best practices of other firms (or other business units within a firm) for achieving these critical success factors, and then

Implements improvements in the firm's processes to match or beat the performance of those competitors.(B)

Benchmarking was first implemented by **Xerox** Corporation in the late 1970s. Today many firms use benchmarking. Some firms are recognized as leaders, and therefore benchmarks, in selected areas—for example, **Toyota** in manufacturing, **Apple** Computer in innovation, among others.

### **Business Process Improvement**

Business process improvement (BPI) is a management method by which managers and workers commit to a program of continuous improvement in quality and other critical success factors. Continuous improvement is very often associated with benchmarking and total quality management as firms seek to identify other firms as models to learn how to improve their critical success factors.

### **BPI Vs. BPR**

While BPI is an *incremental method*, business process reengineering (BPR) *is more radical*. BPR is a method for creating competitive advantage in which a firm reorganizes its operating and management functions, often with the result that positions are modified, combined, or eliminated.

### **Total Quality Management**

Total quality management (TQM) is a method by which management develops policies and practices to ensure that the firm's products and services *exceed customers' expectations*. This approach includes increased product functionality, reliability, durability, and serviceability.

Cost management is used to analyze the cost consequences of different design choices for TQM and to measure and report the many aspects of quality including, for example, production breakdowns and production defects, wasted labor or raw materials, the number of service calls, and the nature of complaints, warranty costs, and product recalls.

### **Lean Accounting**

Lean accounting uses *value streams* to measure the financial benefits of a firm's progress in implementing lean manufacturing. Lean accounting places the firm's products and services into value streams, each of which is a group of related products or services.(B)

Lean accounting. Costing method that supports *creating value* for the customer by costing the entire *value stream*, not individual products or departments, thereby *eliminating waste* in the accounting process.(H)



For example, a company manufacturing consumer electronics might have two groups of products (and two value streams)—digital cameras and video cameras—with several models in each group. Accounting for value streams can help the firm to better understand the profitability of its process improvements and product groups, which leads to better decision making.(B)

### **The Theory of Constraints**

The theory of constraints (TOC) is used to help firms effectively improve a very important critical success factor: cycle time, the rate at which raw materials are converted to finished products. The TOC helps identify and eliminate bottlenecks—places where partially completed products tend to accumulate as they wait to be processed in the production process.

Theory of constraints (TOC): Describes methods to maximize operating income when faced with some bottleneck and some non bottleneck operations.(H)

In the competitive global marketplace common to most industries, the ability to be faster than competitors is often a critical success factor. Many managers argue that the focus on speed in the TOC approach is crucial.

### **Enterprise Risk Management**

Enterprise risk management is a framework and process that organizations use to manage the risks that could negatively or positively affect the company's competitiveness and success.(B)

Enterprise risk management is a process used by a company to proactively identify and manage those risks.(G)

Risk is considered broadly to include:

Hazards such as fire or flood

Financial risks due to foreign currency fluctuations, commodity price fluctuations, and changes in interest rates

Operating risk related to customers, products, or employees

Strategic risk related to top management decisions about the firm's strategy and implementation thereof



## Strategic Management and the Strategic Emphasis in Cost Management

Effective strategic management is critical to the success of the firm or organization. The growing pressures of economic recession, global competition, technological innovation, and changes in business processes have made cost management much more critical and dynamic than ever before. Managers must think competitively; doing so requires a strategy (B).

**Strategy** specifies how an organization matches its own capabilities with the opportunities in the marketplace to accomplish its objectives. In other words, strategy describes how an organization will compete and the opportunities its managers should seek and pursue (H).

### Cost Management

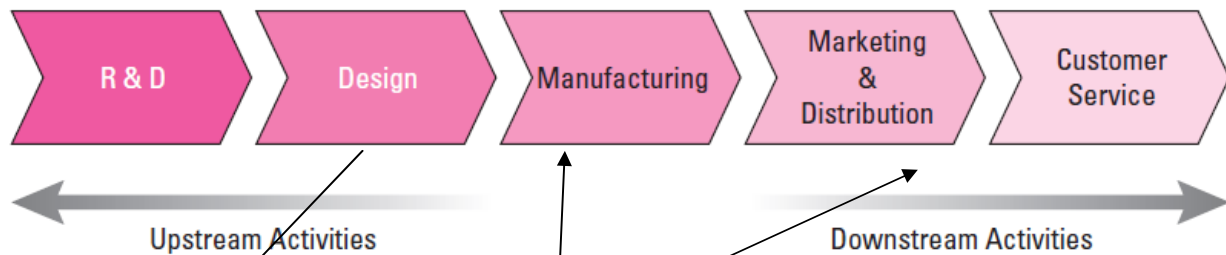
**Cost management information** is used in a wide variety of ways: Whatever the business, a firm must know

- the **cost** of **new** products or services,
- the **cost** of making **improvements** in existing products or services, and
- the **cost** of **finding a new way** to produce the products or provide the services. (H).

**Cost management information** is used:

- to determine **prices**,
- to change product or service offerings to improve profitability,
- to update manufacturing facilities in a timely fashion, and
- to determine new marketing methods or distribution channels. (H).

### Toyota



For example, manufacturers such as **Toyota** study the cost implications of design options for each new product.

The design study includes analysis of projected **manufacturing costs** as well as costs to be incurred after the product is completed, which include **service** and **warranty** costs. Service and warranty costs are often called downstream costs because they occur after manufacturing.

By analyzing both manufacturing and downstream costs, Toyota is able to determine whether product enhancements might cause manufacturing and downstream costs to be out of line with expected **increases in customer value and revenue for that feature**. (H).



### Key Management Accounting Guidelines

Three guidelines help management accountants provide the most value to their companies in strategic and operational decision making:

**Employ a cost-benefit approach.**

**Give full recognition to behavioral and technical considerations.**

**Use different costs for different purposes**

Managers use alternative ways to compute costs in different decision-making situations, because there are different costs for different purposes. A cost concept used for the external-reporting purpose of accounting may not be an appropriate concept for internal, routine reporting to managers.

Consider the **advertising costs** associated with **Microsoft** Corporation's launch of a major product with a useful life of several years.

**For external reporting to shareholders,** television advertising costs for this product are *fully expensed* in the income statement in the year they are incurred. GAAP requires this immediate expensing for external reporting.

**For internal purposes of evaluating management performance,** however, the television advertising costs *could be capitalized and then amortized or written off as expenses over several years*. Microsoft could capitalize these advertising costs if it believes doing so results in a more accurate and fairer measure of the performance of the managers that launched the new product.

### How a Firm Succeeds: The Competitive Strategy

#### Question

## How a Firm Succeeds?

#### Answer

A firm succeeds by implementing a **strategy**, that is, a plan for using resources to achieve sustainable goals within a competitive environment.

Finding a strategy begins with determining the purpose and long-range direction, and therefore the *mission*, of the company.

Below exhibit lists excerpts from the mission statements of several companies.



**Ford Motor Company (ford.com)**

Provide personal mobility for people around the world.

**IBM (ibm.com)**

To lead in the creation, development, and manufacture of the industry's most advanced information technologies, and to translate these into value for our customers.

**Google (google.com)**

To organize the world's information and make it universally accessible and useful.

**Walt Disney (disney.com)**

To make people happy.

**Sara Lee (saralee.com)**

Simply delight you . . . every day.

The mission is developed into

*specific performance objectives*

which are then implemented by

*specific corporate strategies*

that is, *specific actions* to achieve the *objectives* that will fulfill the mission.

**Sara Lee Corporate Strategy**

The company is focused on building sustainable, profitable growth over the long term by achieving share leadership in its core categories:

- innovating around its core products and product categories;
  - expanding into high opportunity geographic markets and strategic joint venture/partnerships;
  - delivering superior quality and value to our customers; and
  - driving operating efficiencies.
- **Focusing on innovation**, execution and performance. As a branded consumer goods company, we know successful new products are a key driver of Sara Lee's success.
- **Building big brands in big markets**. Sara Lee has a strong portfolio of big and growing brands that compete in large consumer markets around the world.
- **Fostering a new culture**. Living and breathing our values every day, our people around the world work as teams, act with integrity, are inclusive, use the imagination and, most important of all, have the passion to excel.

Note that Sara Lee's broad mission statement is explained in terms of more specific objectives, which are in turn operationalized through specific corporate strategies.

**Cost management & the firm's competitive strategy**

Both large and small firms in all types of industries use cost management information. A firm's degree of reliance on cost management depends on the nature of its competitive strategy. Firms also are beginning to use cost management to support their strategic goals. Cost management has shifted away from a focus on the stewardship role, that is, product costing and financial reporting. The new focus is on a management-facilitating role: developing cost and other information to support the management of the firm and the achievement of its strategic goals.(B)

Businesses follow one of two broad strategies:

**Cost leadership strategy**

Many firms compete on the basis of being the **low-cost provider** of the industry's goods or services; for these firms, cost management is critical.(B)

Some companies, such as Southwest Airlines and Vanguard (the mutual fund company) follow a **cost leadership strategy**. They have been profitable and have grown over the years on the basis of providing quality products or services at low prices by judiciously managing their costs.(H)

**Product differentiation strategy**

Other firms, such as cosmetics, fashion, and pharmaceutical firms, compete on the basis of product leadership, in which the unusual or **innovative** features of the product make the firm successful. For these firms, the critical management concern is maintaining product leadership through product development and marketing.(B)

Companies such as Apple Inc., the maker of iPods and iPhones, and Johnson & Johnson, the pharmaceutical giant, follow a **product differentiation strategy**. They generate their profits and growth on the basis of their ability to offer differentiated or unique products or services that appeal to their customers and are often priced higher than the less-popular products or services of their competitors.

*Deciding between these strategies is a critical part of what managers do.(H)*

**Role of cost management**

The role of cost management is to support the firm's strategy by providing the information managers need to succeed in their product development and marketing efforts, such as the expected cost of adding a new product feature, the defect rate of a new part, or the reliability of a new manufacturing process.(B)

Management accountants work closely with managers in **formulating strategy** by providing information about the sources of competitive advantage—for example, the cost, productivity, or efficiency advantage of their company relative to competitors or the premium prices a company can charge relative to the costs of adding features that make its products or services distinctive.

**Strategic cost management** describes cost management that specifically focuses on strategic issues.

**Developing a Competitive Strategy**

In developing a sustainable competitive position, each firm purposefully or as a result of market forces arrives at one of the two competitive strategies: cost leadership or differentiation

**Cost Leadership**

Cost leadership is a strategy in which a firm outperforms competitors in producing products or services at the lowest cost.



### The cost leader

makes sustainable profits at lower prices, thereby limiting the growth of competition in the industry through its success at reducing price and undermining the profitability of competitors, which must meet the firm's low price.

normally has a relatively large market share and tends to avoid niche or segment markets by using the price advantage to attract a large portion of the broad market.

Cost advantages usually result from **productivity** in the manufacturing process, in distribution, or in overall administration.

For example, technological innovation in the manufacturing process and labor savings from overseas production are common routes to competitive productivity.

Firms known to be successful at cost leadership are typically very large manufacturers and retailers, such as Wal-Mart, Texas Instruments, and Dell.

#### A potential weakness of the cost leadership strategy

is the tendency to cut costs in a way that undermines demand for the product or service, for example, by deleting key features. The cost leader remains competitive only so long as the consumer sees that the product or service

#### Differentiation

The differentiation strategy is implemented by creating a product or service that is unique in some important way, usually higher quality, customer service product features, or innovation.

Sometimes a differentiation strategy is called product leadership to refer to the innovation and features in the product. In other cases the strategy might be called a customer-focused or customer-solution strategy, to indicate that the organization succeeds on some dimension(s) of customer service. This perception allows the firm to charge **higher prices** and outperform the competition in profits without reducing costs significantly.

Most industries, including, consumer electronics, and clothing, have differentiated firms. The appeal of differentiation is especially strong for product lines for which the perception of quality and image is important, as in cosmetics, jewelry, and automobiles. Tiffany, Bentley, Rolex, Maytag, and BMW are good examples of firms that have a differentiation strategy.

#### A weakness of the differentiation strategy

Is the firm's tendency to undermine its strength by attempting to lower costs or by ignoring the necessity of having a continual and aggressive marketing plan to reinforce the differentiation. If the consumer begins to believe that the difference is not significant, lower-cost rival products will appear more attractive. is (at least nearly) equivalent to competing products that cost somewhat more.



**Other Strategic Issues**

A firm succeeds, then, by adopting and effectively implementing one of the strategies explained earlier (and summarized in Exhibit 1.9).

Recognize that although one strategy is generally dominant, a firm is most likely to work hard at process improvement throughout the firm, whether cost leader or differentiator, and **on occasion to employ both of the strategies at the same time.**

However, a firm following ***both*** strategies is likely to succeed only if it achieves one of them significantly. A firm that ***does not*** achieve at least ***one*** strategy is ***not likely*** to be successful.

***“getting stuck in the middle”***

**Note:**

This situation is what Michael Porter calls “getting stuck in the middle.” A firm that is stuck in the middle is **not able to sustain a competitive advantage.**

For example, giant retailer Kmart/Sears has been stuck in the middle between trying to compete with Wal-Mart on cost and price, and with style-conscious Target on differentiation. Some have suggested that Kmart/Sears might find success by abandoning the suburban locations where Target and Wal-Mart are strong and instead focusing on their many urban locations where they offer convenience to the urban shopper.

**Distinctive Aspects of the Two Competitive Strategies**

Aspect	Cost Leadership	Differentiation
Strategic target	Broad cross section of the market	Focused section of the market
Basis of competitive advantage	Lowest cost in the industry	Unique product or service
Product line	Limited selection	Wide variety, differentiating features
Production emphasis	Lowest possible cost with high quality and essential product features	Innovation in differentiating products
Marketing emphasis	Low price	Premium price and innovative, differentiating features

- Developing a competitive strategy is the first step for a successful business.
- The critical next step is to implement that strategy, and this is where the management accountant comes in.
- The management accountant works to implement strategy as a part of the management team, by contributing the management accountant’s specific expertise (cost management methods).



**GAAP – IFRS differences**

Major differences in reported financial results when using GAAP vs. IFRS and the impact on analysis  
uu. identify and describe the following differences between U.S. GAAP and IFRS:

**(i) revenue recognition, with respect to the sale of goods, services, deferred receipts and construction contracts;**

- i. IFRS requires revenue recognition based on a contract with the customer. Revenue is recognized as contract milestones are met. IFRS allows only the percentage-of-completion method for the recognition of revenue for long-term or multiyear contracts. U.S. GAAP allows both percentage-of-completion and completed contract methods.

**Note:** Unless specifically noted, IFRS and U.S. GAAP accounting rules are the same. This chart highlights the significant differences between IFRS and U.S. GAAP covered in this lecture.

ISSUE	IFRS	U.S. GAAP
<i>Revenue Recognition</i>	<ul style="list-style-type: none"> <li>Revenue transactions are divided into four categories:               <ol style="list-style-type: none"> <li>1. Sale of goods.</li> <li>2. Rendering of services.</li> <li>3. Revenue from interest, royalties, and dividends.</li> <li>4. Construction contracts.</li> </ol> </li> <li>Common revenue recognition criteria include:               <ul style="list-style-type: none"> <li>o Revenue and costs can be measured reliably.</li> <li>o It is probable that the economic benefits from the transaction will flow to the entity.</li> <li>o Each category has additional revenue recognition criteria.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Revenue is recognized when it is realized or realizable and earned. Four criteria must be met for each element of a contract before revenue can be recognized:               <ol style="list-style-type: none"> <li>1. Persuasive evidence of an arrangement exists.</li> <li>2. Delivery has occurred or services have been rendered.</li> <li>3 The price is fixed and determinable.</li> <li>4. Collection is reasonably assured.</li> </ol> </li> </ul>
<i>Construction Contracts</i>	<ul style="list-style-type: none"> <li>The percentage of completion method is required unless the final outcome of the project cannot be reliably estimated, in which case the cost recovery method is required.</li> <li>The completed contract method is not permitted.</li> </ul>	The percentage of completion method and the completed contract method are permitted.

**IFRS****INSIGHTS**

The general concepts and principles used for revenue recognition are similar between IFRS and GAAP. Where they differ is in the details. As indicated in the chapter, GAAP provides specific guidance related to revenue recognition for many different industries. That is not the case for IFRS.

**9 LEARNING OBJECTIVE**

Compare the accounting procedures related to revenue recognition under GAAP and IFRS.

**RELEVANT FACTS**

Following are the key similarities and differences between GAAP and IFRS related to revenue recognition.



## Similarities

- Revenue recognition fraud is a major issue in U.S. financial reporting. The same situation occurs overseas as evidenced by revenue recognition breakdowns at Dutch software company **Baan NV**, Japanese electronics giant **NEC**, and Dutch grocer **AHold NV**.
- In general, the accounting at point of sale is similar between IFRS and GAAP. As indicated earlier, GAAP often provides detailed guidance, such as in the accounting for right of return and multiple-deliverable arrangements.
- In long-term construction contracts, IFRS requires recognition of a loss immediately if the overall contract is going to be unprofitable. In other words, GAAP and IFRS are the same regarding this issue.

## Differences

- The IASB defines revenue to include both revenues and gains. GAAP provides separate definitions for revenues and gains.
- IFRS has one basic standard on revenue recognition—*IAS 18*. GAAP has numerous standards related to revenue recognition (by some counts over 100).
- Accounting for revenue provides a most fitting contrast of the principles-based (IFRS) and rules-based (GAAP) approaches. While both sides have their advocates, the IASB and the FASB have identified a number of areas for improvement in this area.
- In general, the IFRS revenue recognition principle is based on the probability that the economic benefits associated with the transaction will flow to the company selling the goods, rendering the service, or receiving investment income. In addition, the revenues and costs must be capable of being measured reliably. GAAP uses concepts such as realized, realizable, and earned as a basis for revenue recognition.
- Under IFRS, revenue should be measured at fair value of the consideration received or receivable. GAAP measures revenue based on the fair value of what is given up (goods or services) or the fair value of what is received—whichever is more clearly evident.
- IFRS prohibits the use of the completed-contract method of accounting for long-term construction contracts (*IAS 13*). Companies must use the percentage-of-completion method. If revenues and costs are difficult to estimate, then companies recognize revenue only to the extent of the cost incurred—a cost-recovery (zero-profit) approach.

## ABOUT THE NUMBERS

### Long-Term Contracts (Construction)

Under IFRS, two distinctly different methods of accounting for long-term construction contracts are recognized. They are:

- **Percentage-of-completion method.** Companies recognize revenues and gross profits each period based on the progress of the construction—that is, the percentage of completion. The company accumulates construction costs **plus gross profit earned to date** in an inventory account (Construction in Process), and it accumulates progress billings in a contra inventory account (Billings on Construction in Process). This approach is the same as GAAP.
- **Cost-recovery (zero-profit) method.** In some cases, contract revenue is recognized only to the extent of costs incurred that are expected to be recoverable. Once all costs are recognized, profit is recognized. The company accumulates construction costs in an inventory account (Construction in Process), and it accumulates progress billings in a contra inventory account (Billings on Construction in Process).



The rationale for using percentage-of-completion accounting is that under most of these contracts, the buyer and seller have enforceable rights. The buyer has the legal right to require specific performance on the contract. The seller has the right to require progress payments that provide evidence of the buyer's ownership interest. As a result, a continuous sale occurs as the work progresses. Companies should recognize revenue according to that progression. Companies *must* use the percentage-of-completion method when estimates of progress toward completion, revenues, and costs can be estimated reliably and **all of the following conditions** exist.

1. Total contract revenue can be measured reliably;
2. It is probable that the economic benefits associated with the contract will flow to the company;
3. Both the contract costs to complete the contract and the stage of contract completion at the end of the reporting period can be measured reliably; and
4. The contract costs attributable to the contract can be clearly identified and measured reliably so the actual contract costs incurred can be compared with prior estimates.

Companies should use the cost-recovery method when **one of the following conditions** applies:

- When a company cannot meet the conditions for using the percentage-of-completion method, or
- When there are inherent hazards in the contract beyond the normal, recurring business risks.

The presumption is that percentage-of-completion is the better method. Therefore, companies should use the cost-recovery method only when the percentage-of-completion method is inappropriate.

### **(iii) intangible assets, with respect to development costs and revaluation;**

- iii. Both IFRS and U.S. GAAP require the expensing of basic research expenditures. U.S. GAAP allows the capitalization of development costs when the project is technically feasible only. IFRS requires the intention to complete the project, the ability to sell the resulting product(s), and the availability of resources to complete the project as well as technical feasibility. IFRS allows the revaluing of intangibles to fair value less accumulated amortization. U.S. GAAP does not.

**Note:** Unless specifically noted, IFRS and U.S. GAAP accounting rules are the same. This chart highlights the significant differences between IFRS and U.S. GAAP covered in this lecture.

ISSUE	IFRS	U.S. GAAP
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<i>Intangible Assets</i>	<ul style="list-style-type: none"> <li>• Research costs related to internally developed intangible assets must be expensed.</li> <li>• Development costs may be capitalized if certain criteria are met.</li> <li>• Intangible assets are reported using the cost model or the revaluation model.</li> </ul>	<ul style="list-style-type: none"> <li>• Research and development costs related to internally developed intangible assets must be expensed.</li> <li>• Intangible assets are reported using the cost model only.</li> <li>• Revaluation is prohibited.</li> </ul>
<i>Research and Development Costs</i>	<ul style="list-style-type: none"> <li>• Research costs must be expensed.</li> <li>• Development costs may be capitalized if certain criteria are met.</li> </ul>	Research and development costs must be expensed.
<i>Impairment of Intangible Assets other than Goodwill</i>	<ul style="list-style-type: none"> <li>• An impairment loss is calculated using a one-step model in which the carrying value of the intangible asset is compared to the asset's recoverable amount.</li> <li>• The recoverable amount is the greater of the asset's fair value less costs to sell and the asset's value in use.</li> <li>• Value in use is the present value of the future cash flows expected from the intangible asset.</li> <li>• An impairment loss is recognized to the extent that the carrying value exceeds the recoverable amount.</li> <li>• Reversal of impairment losses is permitted.</li> </ul>	<ul style="list-style-type: none"> <li>• For finite life intangible assets, an impairment loss is calculated using a two-step model in which:               <ol style="list-style-type: none"> <li>1. The carrying amount of the asset is compared to the sum of the undiscounted cash flows expected from the asset, and then</li> <li>2. If the carrying amount exceeds the sum of the undiscounted cash flows, an impairment loss equal to the difference between the carrying amount and fair value of the asset is recorded.</li> </ol> </li> <li>• For indefinite life intangible assets, an impairment loss is calculated using a one-step model in which the carrying amount of the asset is compared to the fair value of the asset.</li> <li>• Reversal of impairment losses is not permitted, unless the intangible asset is held for disposal.</li> </ul>
ISSUE	IFRS	U.S. GAAP
<i>Goodwill Impairment</i>	<ul style="list-style-type: none"> <li>• Goodwill impairment is calculated using a one step test at the cash generating unit (CGU) level in which the carrying value of the CGU is compared the CGU's recoverable amount. The recoverable amount is the greater of the CGU's fair value less costs to sell and its value in use.</li> <li>• An impairment loss is recognized to the extent that the carrying value exceeds the recoverable amount.</li> <li>• The impairment loss is first allocated to goodwill and then allocated on a pro rata basis to the other assets of the CGU.</li> </ul>	<p>Goodwill is calculated using a two-step test at the reporting unit level in which:</p> <ol style="list-style-type: none"> <li>1. The fair value of the reporting unit is compared to its carrying value, including goodwill, and then</li> <li>2. If the fair value of the reporting unit is less than its carrying value, an impairment loss is calculated by comparing the implied fair value of the reporting unit's goodwill to the carrying value of the goodwill.</li> </ol>



There are some significant differences between IFRS and GAAP in the accounting for both intangible assets and impairments. IFRS related to intangible assets is presented in IAS 38 ("Intangible Assets"). IFRS related to impairments is found in IAS 36 ("Impairment of Assets").

**10 LEARNING OBJECTIVE**

Compare the accounting for intangible assets under GAAP and IFRS.

**RELEVANT FACTS**

Following are the key similarities and differences between GAAP and IFRS related to intangible assets.

**Similarities**

- Like GAAP, under IFRS intangible assets (1) lack physical substance and (2) are not financial instruments. In addition, under IFRS an intangible asset is identifiable. To be identifiable, an intangible asset must either be separable from the company (can be sold or transferred) or it arises from a contractual or legal right from which economic benefits will flow to the company. Fair value is used as the measurement basis for intangible assets under IFRS, if it is more clearly evident.
- With issuance of a recent converged statement on business combinations (*IFRS 3* and *SEAS No. 141—Revised*), IFRS and GAAP are very similar for intangibles acquired in a business combination. That is, companies recognize an intangible asset separately from goodwill if the intangible represents contractual or legal rights or is capable of being separated or divided and sold, transferred, licensed, rented, or exchanged. In addition, under both GAAP and IFRS, companies recognize acquired in-process research and development (IPR&D) as a separate intangible asset if it meets the definition of an intangible asset and its fair value can be measured reliably.
- As in GAAP, under IFRS the costs associated with research and development are segregated into the two components. Costs in the research phase are always expensed under both IFRS and GAAP.



## Differences

- IFRS permits revaluation on limited-life intangible assets. Revaluations are not permitted for goodwill and other indefinite-life intangible assets.
- IFRS permits some capitalization of internally generated intangible assets (e.g., brand value) if it is probable there will be a future benefit and the amount can be reliably measured. GAAP requires expensing of all costs associated with internally generated intangibles.
- IFRS requires an impairment test at each reporting date for long-lived assets and intangibles, and records an impairment if the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of the asset's fair value less costs to sell and its value-in-use. **Value-in-use** is the future cash flows to be derived from the particular assets, discounted to present value. Under GAAP, impairment loss is measured as the excess of the carrying amount over the asset's fair value.
- IFRS allows reversal of impairment losses when there has been a change in economic conditions or in the expected use of limited-life intangibles. Under GAAP, impairment losses cannot be reversed for assets to be held and used; the impairment loss

results in a new cost basis for the asset. IFRS and GAAP are similar in the accounting for impairments of assets held for disposal.

- Under IFRS, costs in the development phase of a research and development project are capitalized once technological feasibility (referred to as **economic viability**) is achieved.





**(iv) inventories, with respect to costing methods, valuation and write-downs (e.g., LIFO);**

- iv. IFRS does not allow the use of LIFO for inventory valuation while U.S. GAAP does. IFRS does not have the ceiling (net realizable value – NRV) and floor (NRV reduced by the normal profit margin) rules for LCM. It only uses NRV.

*Note:* Unless specifically noted, IFRS and U.S. GAAP accounting rules are the same. This chart highlights the important differences between IFRS and U.S. GAAP covered in this chapter.

ISSUE	IFRS	U.S. GAAP
<i>Inventory Valuation</i>	Inventory is reported at the lower of cost or net realizable value. Reversal of inventory write-downs is allowed for subsequent recoveries of inventory value.	Inventory is reported at the lower of cost or market.
<i>Inventory Cost Flow Assumptions</i>	<ul style="list-style-type: none"> <li>The method used to account for inventory should match the actual flow of goods</li> <li>The use of LIFO is prohibited</li> </ul>	<ul style="list-style-type: none"> <li>The method used to account for inventory should be the method that most clearly reflects periodic income</li> <li>The method is not required to have a rational relationship with the physical inventory flow</li> <li>The use of LIFO is permitted</li> </ul>



**IFRS**

**INSIGHTS**

The major IFRS requirements related to accounting and reporting for inventories are found in IAS 2 ("Inventories"), IAS 18 ("Revenue"), and IAS 41 ("Agriculture"). In most cases, IFRS and GAAP are the same. The major differences are that IFRS prohibits the use of the LIFO cost flow assumption and records market in the lower-of-cost-or-market differently.

**9 LEARNING OBJECTIVE**

Compare the accounting procedures related to valuation of inventories under GAAP and IFRS.

## RELEVANT FACTS

Following are the key similarities and differences between GAAP and IFRS related to inventories.

### Similarities

- IFRS and GAAP account for inventory acquisitions at historical cost and evaluate inventory for lower-of-cost-or-market subsequent to acquisition.
- Who owns the goods—goods in transit, consigned goods, special sales agreements—as well as the costs to include in inventory are essentially accounted for the same under IFRS and GAAP.



## Differences

- The requirements for accounting for and reporting inventories are more principles-based under IFRS. That is, GAAP provides more detailed guidelines in inventory accounting.
  - A major difference between IFRS and GAAP relates to the LIFO cost flow assumption. GAAP permits the use of LIFO for inventory valuation. IFRS prohibits its use. FIFO and average-cost are the only two acceptable cost flow assumptions permitted under IFRS. Both sets of standards permit specific identification where appropriate.
  - In the lower-of-cost-or-market test for inventory valuation, IFRS defines market as net realizable value. GAAP, on the other hand, defines market as replacement cost subject to the constraints of net realizable value (the ceiling) and net realizable value less a normal markup (the floor). IFRS does not use a ceiling or a floor to determine market.
- 
- Under GAAP, if inventory is written down under the lower-of-cost-or-market valuation, the new basis is now considered its cost. As a result, the inventory may not be written back up to its original cost in a subsequent period. Under IFRS, the write-down may be reversed in a subsequent period up to the amount of the previous write-down. Both the write-down and any subsequent reversal should be reported on the income statement. IFRS accounting for lower-of-cost-or-market is discussed more fully in the *About the Numbers* section below.
  - IFRS requires both biological assets and agricultural produce at the point of harvest to be reported at net realizable value. GAAP does not require companies to account for all biological assets in the same way. Furthermore, these assets generally are not reported at net realizable value. Disclosure requirements also differ between the two sets of standards. IFRS accounting for agriculture and biological assets is discussed more fully in the *About the Numbers* section.

## ABOUT THE NUMBERS

### Lower-of-Cost-or-Net Realizable Value (LCNRV)

Inventories are recorded at their cost. However, if inventory declines in value below its original cost, a major departure from the historical cost principle occurs. Whatever the reason for a decline—obsolescence, price-level changes, or damaged goods—a company should write down the inventory to net realizable value to report this loss. **A company abandons the historical cost principle when the future utility (revenue-producing ability) of the asset drops below its original cost.**





**(v) leases, with respect to leases of land and buildings;**

- v. IFRS requires the disclosure of the net present value (NPV) of operating leases. Operating leases are recorded as liabilities if there are long-term provisions. Under IFRS, when leasing real estate (land and buildings), the land and buildings must be considered separately. U.S. GAAP considers them separately only when the land value at the inception of the lease exceeds 25% of the fair value of the leased real estate. Capital lease treatment in IFRS and in U.S. GAAP is basically the same.

**IFRS Difference**

**Under U.S. GAAP**, if a lease involving land and a building contains a bargain purchase option or if the lease transfers the ownership to the lessee at the end of the lease term, the **land and building** elements are treated separately. If the lease does not meet either the transfer-of-ownership criterion or the bargain-purchase-option criterion, land and building elements are generally treated as a **single unit**, unless the land is 25% or more of the fair value of the total leased property.

**Under IFRS**, a capital lease is called a finance lease. In the classification of the lease as a finance (capital) lease or an operating lease, land and building elements are generally treated **separately**. The land element is normally classified as an operating lease unless title passes to the lessee at the end of the lease term. The building element is classified either as a finance lease or an operating lease based on the regular criteria.



**(vi) long-lived assets, with respect to revaluation, depreciation, and capitalization of borrowing costs;**

- vi. IFRS allows the revaluation of long-lived assets (property, plant, and equipment [PP&E]) to fair value less accumulated depreciation. U.S. GAAP does not. Both IFRS and U.S. GAAP require the capitalization of interest during construction (IDC) when borrowed funds are used in connection with expenditures for self-constructed assets.

*Note:* Unless specifically noted, IFRS and U.S. GAAP accounting rules are the same. This chart highlights the important differences between IFRS and U.S. GAAP covered in this chapter.

ISSUE	IFRS	U.S. GAAP
<i>Fixed Asset Valuation</i>	<ul style="list-style-type: none"> <li>Fixed assets are reported using one of two models</li> <li><i>Cost model:</i> Carrying value = Historical cost – Accumulated depreciation – Impairment</li> <li><i>Revaluation model:</i> Carrying value = Fair value on revaluation date – Subsequent accumulated depreciation – Subsequent impairment               <ul style="list-style-type: none"> <li>Revaluation losses are reported on the income statement</li> <li>Revaluation gains are reported in other comprehensive income as revaluation surplus</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><i>Fixed assets are reported using the cost model:</i> Carrying value = Historical cost – Accumulated depreciation – Impairment</li> </ul>
<i>Investment Property</i>	<ul style="list-style-type: none"> <li>Defined as land and/or buildings held to earn rental income or for capital appreciation</li> <li>Investment property is reported using one of two models</li> <li><i>Cost Model:</i> Carrying value = Historical cost – Accumulated depreciation               <ul style="list-style-type: none"> <li>If the cost model is used, fair value must be disclosed</li> </ul> </li> <li><i>Fair Value Model:</i> <ul style="list-style-type: none"> <li>Investment property is reported at fair value and is not depreciated. Gains and losses from changes in fair value are reported on the income statement</li> </ul> </li> </ul>	No "investment property" classification



ISSUE	IFRS	U.S. GAAP
<i>Fixed Asset Depreciation</i>	<ul style="list-style-type: none"> <li>The depreciation method used should match the expected pattern of fixed asset consumption.</li> <li>Depreciation method, useful life, and salvage value must be reviewed for appropriateness on each balance sheet date.</li> <li>Component depreciation is required.</li> </ul>	<ul style="list-style-type: none"> <li>The depreciation method is not required to match the expected pattern of fixed asset consumption.</li> <li>No requirement to review depreciation method, useful life, and salvage value at each balance sheet date.</li> <li>Can use composite or component depreciation.</li> </ul>
<i>Fixed Asset Impairment</i>	<ul style="list-style-type: none"> <li>Impairment is determined using a one-step test. Impairment exists if the carrying value of the fixed assets exceeds the higher of:               <ol style="list-style-type: none"> <li>FV – Costs to sell</li> <li>Value in use (present value of the expected future cash flows from the fixed asset)</li> </ol> </li> <li>Reversal of impairment losses is permitted.</li> </ul>	<ul style="list-style-type: none"> <li>Impairment is determined using a two-step test.</li> <li><i>Step 1: Test for Recoverability</i> <ul style="list-style-type: none"> <li>An impairment loss must be recorded if the carrying value of the fixed asset exceeds the undiscounted expected future cash flows from the asset.</li> </ul> </li> <li><i>Step 2: Calculate Impairment</i> <ul style="list-style-type: none"> <li>The impairment loss is the difference between the carrying value and fair value of the asset.</li> <li>Reversal of impairment losses is only permitted for assets held for sale.</li> </ul> </li> </ul>

**IFRS****INSIGHTS**

GAAP adheres to many of the same principles of IFRS in the accounting for property, plant, and equipment. Major differences relate to use of component depreciation, impairments, and revaluations.

**RELEVANT FACTS**

Following are the key similarities and differences between GAAP and IFRS related to property, plant, and equipment.

**9 LEARNING OBJECTIVE**

Compare the accounting for property, plant, and equipment under GAAP and IFRS.

**(vii) impairment of assets, with respect to determination, calculation and reversal of loss; and**

- vii. Under U.S. GAAP, the amount of impairment loss on long-lived assets is the amount by which its carrying value exceeds its fair value. IFRS calculates the impairment loss as the amount by which the carrying value exceeds the recoverable amount. The recoverable amount is the higher of: (1) fair value less cost to sell and (2) value in use (the present value of the future cash flows in use, including the disposal value). IFRS allows the reversal of impairment losses not to exceed the initial carrying amount of the asset. U.S. GAAP prohibits reversal of any impairment losses. IFRS prohibits reversals for goodwill.



#### IV. CALCULATION OF THE IMPAIRMENT LOSS (IFRS)

As presented in F2, a fixed asset impairment loss under IFRS is calculated using a **one-step model** in which the carrying value of the fixed asset is compared to the fixed asset's recoverable amount. IFRS define the recoverable amount as the greater of the asset's fair value less costs to sell and the asset's value in use. Value in use is the present value of the future cash flows expected from the fixed asset. IFRS **allow** the reversal of impairment losses.

#### V. REPORTING THE IMPAIRMENT LOSS—GENERAL (U.S. GAAP) **Not extraordinary**

The impairment loss is reported as a component of income from continuing operations before income taxes or in a statement of activities (related to not-for-profit entities). The impairment loss is recognized by reducing the carrying value of the asset to its lower fair value. Restoration of previously recognized impairment losses is prohibited under U.S. GAAP.

##### PASS KEY

It is important to remember the following rules when performing your calculations under U.S. GAAP:

- Determining the impairment—use undiscounted future net cash flows
- Amount of the impairment—use fair value (FV) or discounted (PV) future net cash flows

### Similarities

- The definition of property, plant, and equipment is essentially the same under GAAP and IFRS.
- Under both GAAP and IFRS, changes in depreciation method and changes in useful life are treated in the current and future periods. Prior periods are not affected.
- The accounting for plant asset disposals is the same under GAAP and IFRS.
- The accounting for the initial costs to acquire natural resources is similar under GAAP and IFRS.
- Under both GAAP and IFRS, interest costs incurred during construction must be capitalized. Recently, IFRS converged to GAAP.
- The accounting for exchanges of non-monetary assets is essentially the same between IFRS and GAAP. GAAP requires that gains on exchanges of non-monetary assets be recognized if the exchange has commercial substance. This is the same framework used in IFRS.
- GAAP and IFRS both view depreciation as allocation of cost over an asset's life. GAAP permits the same depreciation methods (straight-line, diminishing-balance, units-of-production) as IFRS.





## Differences

- IFRS requires component depreciation. Under GAAP, component depreciation is permitted but is rarely used.
- Under IFRS, companies can use either the historical cost model or the revaluation model. GAAP does not permit revaluations of property, plant, and equipment or mineral resources.
- In testing for impairments of long-lived assets, GAAP uses a different model than IFRS to test for impairments (details of the IFRS impairment test is presented in the *About the Numbers* discussion). As long as future undiscounted cash flows exceed the carrying amount of the asset, no impairment is recorded. The IFRS impairment test is stricter. However, unlike GAAP, reversals of impairment losses are permitted.

## ABOUT THE NUMBERS

### Component Depreciation

Under IFRS, companies are required to use **component depreciation**. IFRS requires that each part of an item of property, plant, and equipment that is significant to the total cost of the asset must be depreciated separately. Companies therefore have to exercise judgment to determine the proper allocations to the components. As an example, when a company like **Nokia** purchases a building, it must determine how the various building components (e.g., the foundation, structure, roof, heating and cooling system, and elevators) should be segregated and depreciated.



**(viii) financial statement presentation, with respect to extraordinary items and changes in equity**

- viii. IFRS prohibits the separate presentation of extraordinary items in the income statement. U.S. GAAP allows presentation of extraordinary items. Extraordinary items are those that are unusual, infrequent, and outside management control. All three criteria must be met.



**IFRS**

**INSIGHTS**

As in GAAP, the income statement is a required statement for IFRS. In addition, the content and presentation of an IFRS income statement is similar to the one used for GAAP. IAS 1, "Presentation of Financial Statements," provides general guidelines for the reporting of income statement information. Subsequently, a number of international standards have been issued that provide additional guidance to issues related to income statement presentation.

**9 LEARNING OBJECTIVE**

Compare the accounting procedures for income reporting under GAAP and IFRS.

**RELEVANT FACTS**

Following are the key similarities and differences between GAAP and IFRS related to the income statement.

**Similarities**

- Both GAAP and IFRS require companies to indicate the amount of net income attributable to noncontrolling interest.
- Both GAAP and IFRS follow the same presentation guidelines for discontinued operations, but IFRS defines a discontinued operation more narrowly. Both standard-setters have indicated a willingness to develop a similar definition to be used in the joint project on financial statement presentation.
- Both GAAP and IFRS have items that are recognized in equity as part of comprehensive income but do not affect net income. Both GAAP and IFRS allow a one statement or two statement approach to preparing the statement of comprehensive income.

**Differences**

- Presentation of the income statement under GAAP follows either a single-step or multiple-step format. IFRS does not mention a single-step or multiple-step approach. In addition, under GAAP, companies must report an item as extraordinary if it is unusual in nature and infrequent in occurrence. Extraordinary items are prohibited under IFRS.
- Under IFRS, companies must classify expenses by either nature or function. GAAP does not have that requirement, but the SEC requires a functional presentation.
- IFRS identifies certain minimum items that should be presented on the income statement. GAAP has no minimum information requirements. However, the SEC rules have more rigorous presentation requirements.
- IFRS does not define key measures like income from operations. SEC regulations define many key measures and provide requirements and limitations on companies reporting non-GAAP/IFRS information.
- Under IFRS, revaluation of property, plant, and equipment, and intangible assets is permitted and is reported as other comprehensive income. The effect of this difference is that application of IFRS results in more transactions affecting equity but not net income.

**(vi) long-lived assets, with respect to revaluation, depreciation, and capitalization of borrowing costs;****IV. VALUATION OF FIXED ASSETS UNDER IFRS**

Cost  
Revaluation

Under IFRS, fixed assets are initially recognized at the cost to acquire the asset. Subsequent to acquisition, fixed assets can be valued using the cost model or the revaluation model.

**A. Cost Model**

Under the cost model, fixed assets are reported at historical cost adjusted for accumulated depreciation and impairment.



Cost model carrying value = Historical cost – Accumulated depreciation – Impairment

**B. Revaluation Model**

Under the revaluation model, a class of fixed assets is revalued to fair value and then reported at fair value less subsequent accumulated depreciation and impairment.



Revaluations must be made frequently enough to ensure that carrying amount does not differ materially from fair value at the end of the reporting period. When fair value differs materially from carrying value, a further revaluation is required.

Revaluation model carrying value = Fair value at revaluation date – Subsequent accumulated depreciation – Subsequent impairment

Revaluation must be applied to all items in a class of fixed assets, not to individual fixed assets. Land and buildings, machinery, furniture and fixtures, and office equipment are examples of fixed asset classes. When fixed assets are reported at fair value, the historical cost equivalent (cost – accumulated depreciation – impairment) must be disclosed.

**1. Revaluation Losses** *Income statement*

When fixed assets are revalued, revaluation losses (fair value < carrying value before revaluation) are reported on the income statement, unless the revaluation loss reverses a previously recognized revaluation gain. A revaluation loss that reverses a previously recognized revaluation gain is recognized in other comprehensive income and reduces the revaluation surplus in accumulated other comprehensive income.

**2. Revaluation Gains** *Not on income statement*

Revaluation gains (fair value > carrying value before revaluation) are reported in other comprehensive income and accumulated in equity as revaluation surplus, unless the revaluation gain reverses a previously recognized revaluation loss. Revaluation gains are reported on the income statement to the extent that they reverse a previously recognized revaluation loss.

**3. Impairment**

If revalued fixed assets subsequently become impaired, the impairment is recorded by first reducing any revaluation surplus to zero with further impairment losses reported on the income statement. *OCI ↓ to zero then loss on IS*





EXAMPLE

On December 31, Year 1, an entity chose to revalue all of its fixed assets under IFRS. On that date, the fixed assets had the following carrying values and fair values:

	<u>Carrying Value</u>	<u>Fair Value</u>	
Land	\$10,500,000	\$11,100,000	OCI ↑ 600
Buildings	6,400,000	6,000,000	Loss on IS 400
Equipment	3,300,000	3,600,000	OCI ↑ 300

Compute the revaluation gain and loss to be reported on the December 31, Year 1 financial statements.

*Revaluation Loss:*

The entity will report a loss on the revaluation of the buildings because fair value is less than carrying value:

$$\text{Loss on Revaluation of Buildings} = \$6,000,000 - \$6,400,000 = (\$400,000)$$

The loss, which is essentially an impairment loss, will be reported on the income statement.

*Revaluation Gain:*

The entity will report a gain on the revaluation of the land and equipment because the fair values of these assets exceed their respective carrying values:

$$\text{Gain on Revaluation of Land} = \$11,100,000 - \$10,500,000 = \$600,000$$

$$\text{Gain of Revaluation of Equipment} = \$3,600,000 - \$3,300,000 = \$300,000$$

The total revaluation gain of \$900,000 would be reported as revaluation surplus in other comprehensive income.





**Note:** Unless specifically noted, IFRS and U.S. GAAP accounting rules are the same. This chart highlights the significant differences between IFRS and U.S. GAAP covered throughout this course.

## F-1

ISSUE	IFRS	U.S. GAAP
<i>Conceptual Framework</i>	Entities are directed to refer to and consider the applicability of the concepts in the IASB <i>Conceptual Framework</i> when developing accounting policies in the absence of a standard or interpretation that specifically applies to an item.	Entities cannot apply the FASB conceptual framework to specific accounting issues.
<i>Discontinued Operations</i>	Before a component can be classified as held for sale, the individual assets and liabilities of the component must be measured in accordance with applicable standards and any resulting gains and losses must be recognized. After classification as held for sale, the component is reported at the lower of carrying value and fair value less costs to sell.	Assets and liabilities are not required to be remeasured before a component is classified as held for sale, but the classification of a component as held for sale does trigger an impairment analysis of the component.
<i>Extraordinary Items</i>	The reporting of amounts as extraordinary is prohibited.	Gains and losses may be reported as extraordinary if they are unusual in nature, infrequent in occurrence, and material.
<i>Accounting Changes</i>	When an entity applies an accounting change retroactively or makes a retrospective restatement of items in the financial statements, the entity must (at a minimum) present three balance sheets (end of current period, end of prior period, and beginning of prior period) and two of each other financial statement. The cumulative effect adjustment is an adjustment to beginning retained earnings at the beginning of the prior period.	Comparative financial statements are not required by U.S. GAAP. Note that the SEC does require comparative annual financial statements for public companies (at a minimum, two balance sheets and three statements of income, changes in owners' equity, and cash flows). Neither GAAP nor the SEC have a three balance sheet requirement when an entity applies an accounting change retroactively. The cumulative effect adjustment is an adjustment to the beginning retained earnings of the earliest period presented.
<i>Change in Accounting Entity</i>	IFRS does not include the concept of a change in accounting entity.	If a change in accounting entity occurs in the current year, all previous financial statements that are presented in comparative financial statements along with the current year should be restated to reflect the information for the new reporting entity.



ISSUE	IFRS	U.S. GAAP
<i>Error Correction</i>	When it is impracticable to determine the cumulative effect of an error, the entity is required to restate information prospectively from the earliest date that is practicable.	There is no impracticity exemption for error corrections.
<i>Comprehensive Income</i>	Other comprehensive income includes revaluation surpluses (gains) recognized when intangible assets and fixed assets are revalued.	Long-term asset revaluation is not permitted under U.S. GAAP. Therefore, revaluation surpluses are not included in other comprehensive income.
<i>Notes to Financial Statements</i>	IFRS requires an explicit and unreserved statement of compliance with IFRS in the notes to the financial statements. An entity cannot describe financial statements as complying with IFRSs unless they comply with all IFRS requirements.	U.S. GAAP does not have a similar requirement.
<i>Notes to Financial Statements</i>	The summary of significant accounting policies includes disclosure of judgments and estimates made in the process of applying accounting policies.	The summary of significant accounting policies includes disclosure of significant estimates, but not of judgments made in preparing the financial statements.

<i>Related Party Disclosures</i>	Disclosure of key management compensation arrangements is required.	No disclosure of key management compensation arrangements under U.S. GAAP. The SEC does require disclosure of key management compensation arrangements outside the financial statements.
<i>Risks and Uncertainties</i>	Required disclosure of assumptions made about the future and other major sources of estimation uncertainty at the end of the reporting period that could result in a material adjustment to the carrying amount of assets and liabilities within the next financial year.	Required disclosure of: <ol style="list-style-type: none"> <li>1. Nature of operations</li> <li>2. Use of estimates in the preparation of financial statements</li> <li>3. Estimate of the effect of a change in accounting estimate when it is possible that the accounting estimate will change in the near term and that the effect of the change will be material</li> <li>4. Vulnerability to the risk of a near-term severe impact from a material concentration</li> </ol>

**(ii) expense recognition, with respect to share-based payments and employee benefits;**

- ii. The differences between U.S. GAAP and IFRS treatment of share-based payments and employee benefits are beyond the scope of the CMA examination.

**HOCK P:145 TILL P:150****3) Expense Recognition (Share-based Payments and Employee Benefits)**

The primary source of IFRS guidance is:

- IAS 19: Employee benefits
- IFRS 2: Share based payments

The primary source of U.S. GAAP guidance is:

- ASC 712: Compensation – Nonretirement post employment benefits
- ASC 715: Compensation – Retirement benefits
- ASC 718: Compensation – Stock compensation

ISSUE	IFRS	U.S. GAAP
Accounting for Stock Issued to Employees	Employee stock purchase plans and stock options are generally considered to be compensatory.	Employee stock purchase plans and stock options are non-compensatory if they meet specific requirements.

ISSUE	IFRS	U.S. GAAP
<i>Defined benefit pension plans</i>	The defined benefit obligation (DBO) is the defined benefit pension plan liability.	The projected benefit obligation (PBO) is the defined benefit pension plan liability.
<i>Defined benefit pension plans</i>	Defined benefit cost includes service cost and net interest on the defined benefit liability (asset).	The components of net periodic pension cost are <del>S</del> IRAGE— <del>S</del> ervice cost, <del>I</del> nterest cost, <del>R</del> eturn on plan assets, <del>A</del> mortization of prior service cost, <del>G</del> ain/loss amortization, <del>E</del> xisting net obligation/asset amortization.
<i>Defined benefit pension plans</i>	The components of defined benefit cost are generally reported separately on the income statement; there is no requirement that these amounts be aggregated and presented as one amount.	The components of net periodic pension cost must be aggregated and presented as one amount on the income statement.
<i>Defined benefit pension plans</i>	Prior service cost is referred to as past service cost. When a plan is amended, past service cost increases the DBO and is reported as defined benefit service cost on the income statement. Under IFRS, past service cost is not booked to other comprehensive income.	Prior service cost increases the PBO and other comprehensive income in the period incurred and is then amortized to pension expense over the plan participant's remaining years of service.





<i>Defined benefit pension plans</i>	Gains and losses are referred to as remeasurements of the net defined benefit liability (asset) and are reported in other comprehensive income. Remeasurements of the net defined benefit liability (asset) reported in OCI are not reclassified (amortized) to the income statement in subsequent periods.	Entities have two choices when accounting for gains and losses:  1. Recognize on the income statement in the period incurred.  2. Recognize in other comprehensive income in the period incurred and then amortize to pension expense using the corridor approach.
<i>Defined benefit pension plans</i>	The funded status (DBO - fair value of plan assets) of the pension plan is reported on the balance sheet as the net defined benefit liability (asset). A liability is reported if the plan is underfunded (DBO > fair value of plan assets) and an asset is reported if the plan is overfunded (DBO < fair value of plan assets). If a net defined benefit asset is reported, the amount of the asset cannot exceed the present value of future economic benefits available to the entity in the form of cash refunds or reductions in future contributions that result from the overfunding. IFRS do not specify whether an entity should classify the net defined benefit liability (asset) as current or noncurrent.	The funded status of an overfunded pension plan is reported in full as a noncurrent asset. The funded status of an underfunded pension plan is reported in full as a current liability, a noncurrent liability, or both.
<i>Defined benefit pension plans</i>	Remeasurements of the net defined benefit liability (asset) are included in other comprehensive income and are not reclassified (amortized) to the income statement in subsequent periods. However, an entity can transfer those amounts recognized in other comprehensive income within equity.	Unrecognized prior service cost and unrecognized pension gains and losses are reported in accumulated other comprehensive income. The pension benefit asset or liability is equal to the funded status of the pension plan.

<i>Sick pay benefits</i>	Entities are required to accrue sick pay benefits as services are rendered by employees.	Employers are not required to accrue nonvesting accumulating rights to receive sick pay benefits. Sick pay benefits are accrued only when the four criteria for liability recognition are met and the estimate is reliable.
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this manner, Hill avoids personal property taxes in certain states. Other advantages of this transaction for Hill are the removal of the current liability from its balance sheet and the ability to manipulate income. For Chase, the purchase of the goods may solve a LIFO liquidation problem (discussed later), or Chase may enter into a similar reciprocal agreement at a later date.

These arrangements are often described in practice as “**parking transactions**.” In this situation, Hill simply parks the inventory on Chase’s balance sheet for a short period of time. Generally, when a repurchase agreement exists, Hill should report the inventory and related liability on its books. [1] The reason? Hill has retained the risks and rewards of ownership.



See the FASB Codification section (page 449).

### Sales with High Rates of Return

In industries such as publishing, music, toys, and sporting goods, formal or informal agreements often exist that permit purchasers to return inventory for a full or partial refund.

To illustrate, Quality Publishing Company sells textbooks to Campus Bookstores with an agreement that Campus may return for full credit any books not sold. Historically, Campus Bookstores returned approximately 25 percent of the textbooks from Quality Publishing. How should Quality Publishing report its sales transactions?

One alternative is to record the sale at the full amount and establish an estimated sales returns and allowances account until the return period has expired. A second possibility is to not record any sales until circumstances indicate the amount of inventory the buyer will return. The key question is: Under what circumstances should Quality Publishing consider the inventory sold? The answer is that **when Quality Publishing can reasonably estimate the amount of returns**, it should consider the goods sold but establish a return liability for the amount of the estimated returns. Conversely, if returns are unpredictable, Quality Publishing should not consider the goods sold and it should not remove the goods from its inventory. [2]

### What do the numbers mean? NO PARKING!

In one of the more elaborate accounting frauds, employees at **Kurzweil Applied Intelligence Inc.** booked millions of dollars in phony inventory sales during a two-year period that straddled two audits and an initial public stock offering. They dummed up phony shipping documents and logbooks to support bogus sales transactions. Then they shipped high-tech equipment, not to customers, but to a public warehouse for “temporary” storage, where some of it sat for 17 months. (Kurzweil still had ownership.)

To foil auditors’ attempts to verify the existence of the inventory, Kurzweil employees moved the goods from warehouse to warehouse. To cover the fraudulently recorded sales transactions as auditors closed in, the employees brought back the still-hidden goods, under the pretense that

the goods were returned by customers. When auditors uncovered the fraud, the bottom dropped out of Kurzweil’s stock.

Similar inventory shenanigans occurred at **Delphi**, which used side-deals with third parties to get inventory off its books and to record sales. The overstatement in income eventually led to a bankruptcy filing for Delphi.

More recently and with an international twist, concerns about inventory shenanigans are surfacing in China. Following years of torrid growth, the global economic slowdown has resulted in a huge buildup of unsold goods that is cluttering shop floors, clogging car dealerships, and filling factory warehouses. The large inventory overhang is raising alarms about phantom profits and suspect economic data coming out of China.

Sources: Adapted from “Anatomy of a Fraud,” *BusinessWeek* (September 16, 1996), pp. 90–94; J. McCracken, “Delphi Executives Named in Suit over Inventory Practices,” *Wall Street Journal* (May 5, 2005), p. A3; and K. Bradsher, “China Confronts Mounting Piles of Unsold Goods,” *New York Times* (August 23, 2012).

### Effect of Inventory Errors

Items incorrectly included or excluded in determining cost of goods sold through inventory misstatements will result in errors in the financial statements. Let’s look at two cases, assuming a periodic inventory system.

**424 Chapter 8 Valuation of Inventories: A Cost-Basis Approach****Ending Inventory Misstated**

What would happen if IBM correctly records its beginning inventory and purchases, but fails to include some items in ending inventory? In this situation, we would have the following effects on the financial statements at the end of the period.

**ILLUSTRATION 8-7**

Financial Statement  
Effects of Misstated  
Ending Inventory

Balance Sheet		Income Statement	
Inventory	Understated	Cost of goods sold	Overstated
Retained earnings	Understated	Net income	Understated
Working capital	Understated		
Current ratio	Understated		

If ending inventory is understated, working capital (current assets less current liabilities) and the current ratio (current assets divided by current liabilities) are understated. If cost of goods sold is overstated, then net income is understated.

To illustrate the effect on net income over a two-year period (2013–2014), assume that Jay Weiseman Corp. understates its ending inventory by \$10,000 in 2013; all other items are correctly stated. The effect of this error is to decrease net income in 2013 and to increase net income in 2014. The error is counterbalanced (offset) in 2014 because beginning inventory is understated and net income is overstated. As Illustration 8-8 shows, the income statement misstates the net income figures for both 2013 and 2014 although the *total* for the two years is correct.

**ILLUSTRATION 8-8**

Effect of Ending  
Inventory Error on Two  
Periods

JAY WEISEMAN CORP. (All Figures Assumed)				
	Incorrect Recording		Correct Recording	
	2013	2014	2013	2014
Revenues	\$100,000	\$100,000	\$100,000	\$100,000
Cost of goods sold				
Beginning inventory	25,000	20,000	25,000	30,000
Purchased or produced	45,000	60,000	45,000	60,000
Goods available for sale	70,000	80,000	70,000	90,000
Less: Ending inventory	20,000*	40,000	30,000	40,000
Cost of goods sold	50,000	40,000	40,000	50,000
Gross profit	50,000	60,000	60,000	50,000
Administrative and selling expenses	40,000	40,000	40,000	40,000
Net income	\$ 10,000	\$ 20,000	\$ 20,000	\$ 10,000
	Total income for two years = \$30,000		Total income for two years = \$30,000	

\*Ending inventory understated by \$10,000 in 2013.

If Weiseman *overstates* ending inventory in 2013, the reverse effect occurs. Inventory, working capital, current ratio, and net income are overstated, and cost of goods sold is understated. The effect of the error on net income will be counterbalanced in 2014, but the income statement misstates both years' net income figures.

**Purchases and Inventory Misstated**

Suppose that Bishop Company does not record as a purchase certain goods that it owns and does not count them in ending inventory. The effect on the financial statements (assuming this is a purchase on account) is as follows.

Balance Sheet		Income Statement	
Inventory	Understated	Purchases	Understated
Retained earnings	No effect	Cost of goods sold	No effect
Accounts payable	Understated	Net income	No effect
Working capital	No effect	Inventory (ending)	Understated
Current ratio	Overstated		

**ILLUSTRATION 8-9**

Financial Statement  
Effects of Misstated  
Purchases and Inventory

Omission of goods from purchases and inventory results in an understatement of inventory and accounts payable in the balance sheet. It also results in an understatement of purchases and ending inventory in the income statement. However, the omission of such goods does not affect net income for the period. Why not? Because Bishop understates both purchases and ending inventory by the same amount—the error is thereby offset in cost of goods sold. Total working capital is unchanged, but the current ratio is overstated because of the omission of equal amounts from inventory and accounts payable.

To illustrate the effect on the current ratio, assume that Bishop *understates* accounts payable and ending inventory by \$40,000. Illustration 8-10 shows the understated and correct data.

Purchases and Ending Inventory Understated		Purchases and Ending Inventory Correct	
Current assets	\$120,000	Current assets	\$160,000
Current liabilities	\$ 40,000	Current liabilities	\$ 80,000
Current ratio	3 to 1	Current ratio	2 to 1

**ILLUSTRATION 8-10**

Effects of Purchases and  
Ending Inventory Errors

The understated data indicate a current ratio of 3 to 1, whereas the correct ratio is 2 to 1. Thus, understatement of accounts payable and ending inventory can lead to a “window-dressing” of the current ratio. That is, Bishop can make the current ratio appear better than it is.

If Bishop *overstates* both purchases (on account) and ending inventory, then the effects on the balance sheet are exactly the reverse. The financial statements overstate inventory and accounts payable, and understate the current ratio. The overstatement does not affect cost of goods sold and net income because the errors offset one another. Similarly, working capital is not affected.

We cannot overemphasize the importance of proper inventory measurement in presenting accurate financial statements. For example, **Leslie Fay**, a women’s apparel maker, had accounting irregularities that wiped out one year’s net income and caused a restatement of the prior year’s earnings. One reason: It inflated inventory and deflated cost of goods sold. **Anixter Bros. Inc.** had to restate its income by \$1.7 million because an accountant in the antenna manufacturing division overstated the ending inventory, thereby reducing its cost of sales. Similarly, **AM International** allegedly recorded as sold products that were only being rented. As a result, inaccurate inventory and sales figures inappropriately added \$7.9 million to pretax income.

**Underlying Concepts**

When inventory is misstated, its presentation is not representationally faithful.

## COSTS INCLUDED IN INVENTORY

One of the most important problems in dealing with inventories concerns the dollar amount at which to carry the inventory in the accounts. **Companies generally account for the acquisition of inventories, like other assets, on a cost basis.**

**4 LEARNING OBJECTIVE**

Understand the items to include as inventory cost.

$$\frac{\text{Decrease at Retail Prices of Most Recently Added Layer}}{\text{Decrease at Base-Year Retail Prices}} = \frac{\text{Price Index of Most Recently Added Layer}}{\text{Base-Year Price Index}}$$

Note that for large decreases that affect more than one layer of inventory, the price index applicable to each layer must be used in the conversion index.

5. The increase (decrease) at current-year retail prices is converted to cost (\$1,944) by multiplying by the cost-to-retail ratio for the appropriate year. If there is an increase, the cost-to-retail ratio for the current year is used (0.60). If there is a decrease, the cost-to-retail ratio(s) for the LIFO layer(s) being removed is used.
6. The ending inventory at cost (\$9,944) is computed by adding (subtracting) the increase (decrease) at cost to the beginning inventory at cost (\$1,944 + \$8,000).

Continuing the example, in 2011 the ending inventory at retail of \$23,960 is converted to base-year retail prices of \$20,835 by multiplying by the base-year conversion index ( $100 \div 115$ ). Comparing the \$20,835 to the ending inventory at retail base-year prices in 2010 of \$15,000 results in an increase in inventory at base-year retail prices of \$5,835. This increase is multiplied by the current-year conversion index of  $115 \div 100$  to compute the increase at current retail prices of \$6,710. The \$6,710 is multiplied by the cost-to-retail ratio of 0.64 to compute the \$4,294 increase at current-year costs, which is added to the \$9,944 ending inventory cost from 2010 to determine the \$14,238 cost of the ending inventory for 2011.

In 2012 there is a *decrease* in the inventory of \$1,693 at base-year retail prices. This is converted into a \$1,947 decrease by applying the conversion index for 2011, since part of the layer added in 2011 is being removed. This decrease of \$1,947 at retail is converted to cost by applying the cost-to-retail ratio for 2011 of 0.64, resulting in a decrease at cost of \$1,246. Note that the conversion index of  $115 \div 100$  and the cost ratio of 0.64 would be used only for a reduction in inventory at base-year retail prices of \$5,835, because this is the amount of the increase from 2011. The next \$3,000 reduction at base-year retail prices would be at the conversion index of  $108 \div 100$  and the cost ratio of 0.60 (for the layer added in 2010) and the remaining \$12,000 at a conversion index of  $100 \div 100$  and the cost ratio of 0.667 (for the beginning inventory from 2010).

## EFFECTS OF INVENTORY ERRORS

In addition to the special methods we described earlier in the chapter, errors made by a company may affect its ending inventory valuation. Errors in the valuation of inventory and the recording of purchases can result in inaccurate values on the company's balance sheet and income statement. We summarize the effects of some common errors in Exhibit 9-1 (assuming a periodic inventory system and ignoring income taxes):

**9** Understand the effects of inventory errors on the financial statements.

### EXHIBIT 9-1 Effects of Inventory Errors

- I. A purchase on credit is omitted from both the Purchases account and ending inventory and is *not* recorded in the succeeding year.
  - A. **Current year**
    1. *Income Statement.* Income is correct because the errors in the purchases and ending inventory offset each other.
    2. *Balance Sheet.* Ending inventory and accounts payable are understated.
  - B. **Succeeding year**
    1. *Income Statement.* Income is overstated because beginning inventory is understated, and therefore, cost of goods sold is understated.
    2. *Balance Sheet.* Accounts payable is understated and retained earnings is overstated. Note that if the purchase omitted from the current year was included in the succeeding year, the income would be correct in the second year because the errors would again offset each other. Accounts payable and retained earnings would also be correct.

(Continued)



**EXHIBIT 9-1** (Continued)

- II. A purchase on credit is omitted from the Purchases account but ending inventory is correct.
- A. Current year**
1. *Income Statement.* Income is overstated because purchases are understated and therefore cost of goods sold is understated.
  2. *Balance Sheet.* Accounts payable is understated because a purchase has been omitted. Retained earnings is overstated because income is overstated.
- B. Succeeding year**
1. *Income Statement.* No effect because the beginning inventory, purchases, and ending inventory are correct.
  2. *Balance Sheet.* Accounts payable is understated and retained earnings is overstated, due to the error in the previous period.
- III. Ending inventory is over(under)stated due to quantity and/or costing errors, but purchases are correct.
- A. Current year**
1. *Income Statement.* Income is over(under)stated because cost of goods sold is under(over)stated.
  2. *Balance Sheet.* Ending inventory and retained earnings are over(under)stated.
- B. Succeeding year**
1. *Income Statement.* Income is under(over)stated because beginning inventory is over(under)stated, and therefore, cost of goods sold is over(under)stated.
  2. *Balance Sheet.* Correct because the errors in inventory and retained earnings in the previous year were counterbalanced in this year.

Note that in the third situation in Exhibit 9-1, the total income for the two years combined is correct, as is the ending inventory for the succeeding year. For example, assume that a company's periodic inventory at December 31, 2010 is overstated by \$5,000, but purchases are correct. The following errors occur (ignoring income taxes) in the company's financial statements:

2010: *Income Statement.* Cost of goods sold is understated by \$5,000 and income is overstated by \$5,000.

*Balance Sheet.* Ending inventory and retained earnings are overstated by \$5,000.

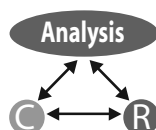
2011: *Income Statement.* Cost of goods sold is overstated by \$5,000 and income is understated by \$5,000.

*Balance Sheet.* Ending inventory and retained earnings are correct because the errors have counterbalanced each other.

These errors are illustrated by the following equations:

	Beginning Inventory	+	Purchases	=	Cost of Goods Sold	+	Ending Inventory
2010:	Correct		Correct		–\$5,000		+\$5,000
2011:	+\$5,000		Correct		+\$5,000		Correct

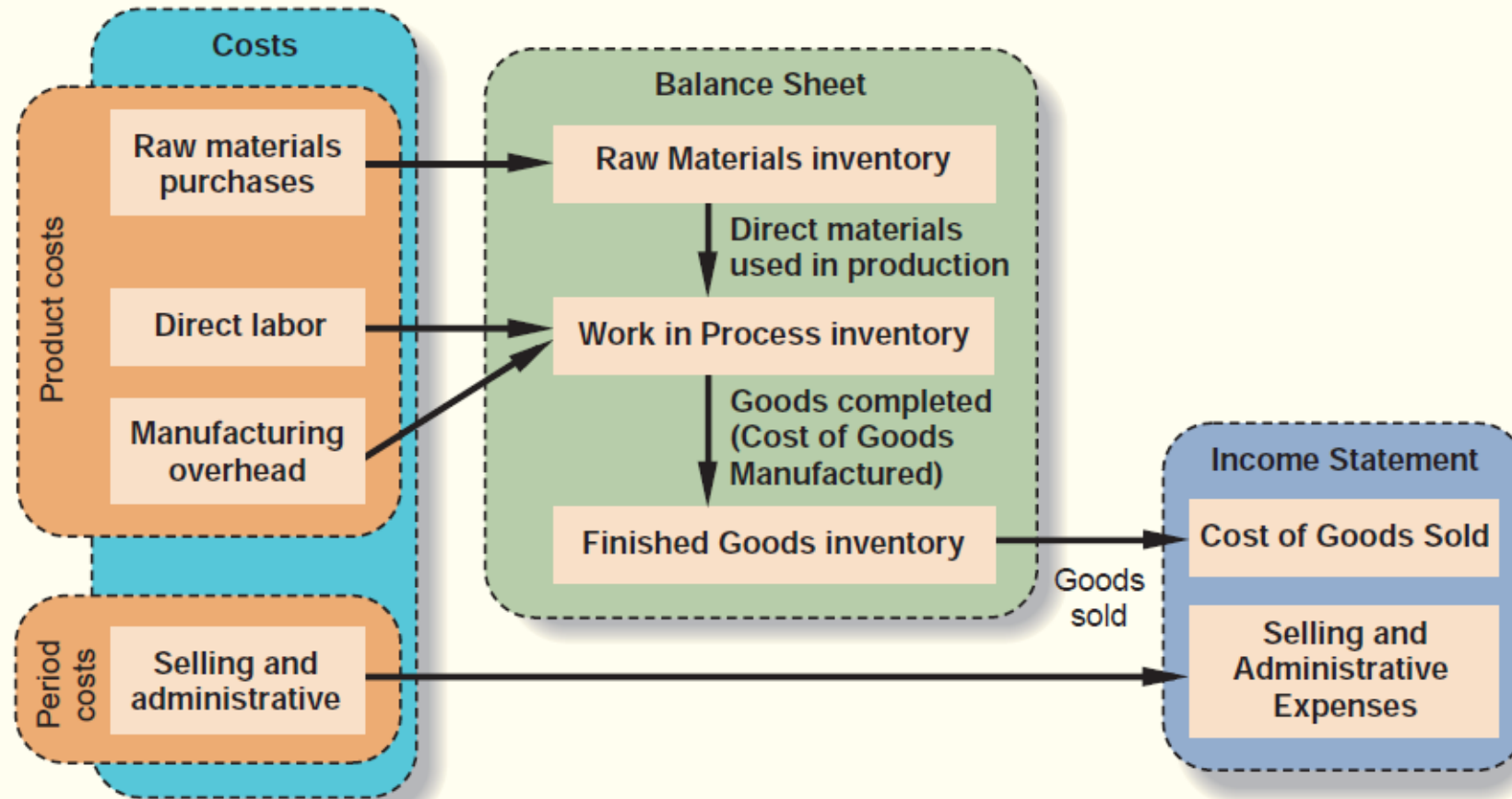
Note that if income taxes are considered, the effect of the error on income is reduced. For example, if the company has an income tax rate of 30%, the inventory is still overstated by \$5,000, but net income in 2010 is overstated by only \$3,500 [ $\$5,000 \times (1 - 0.30)$ ] and income taxes payable is increased by \$1,500 ( $\$5,000 \times 0.30$ ). Thus, the errors affect more items on the company's balance sheet, but the balance sheet still balances because assets are overstated by \$5,000, liabilities by \$1,500, and stockholders' equity by \$3,500.



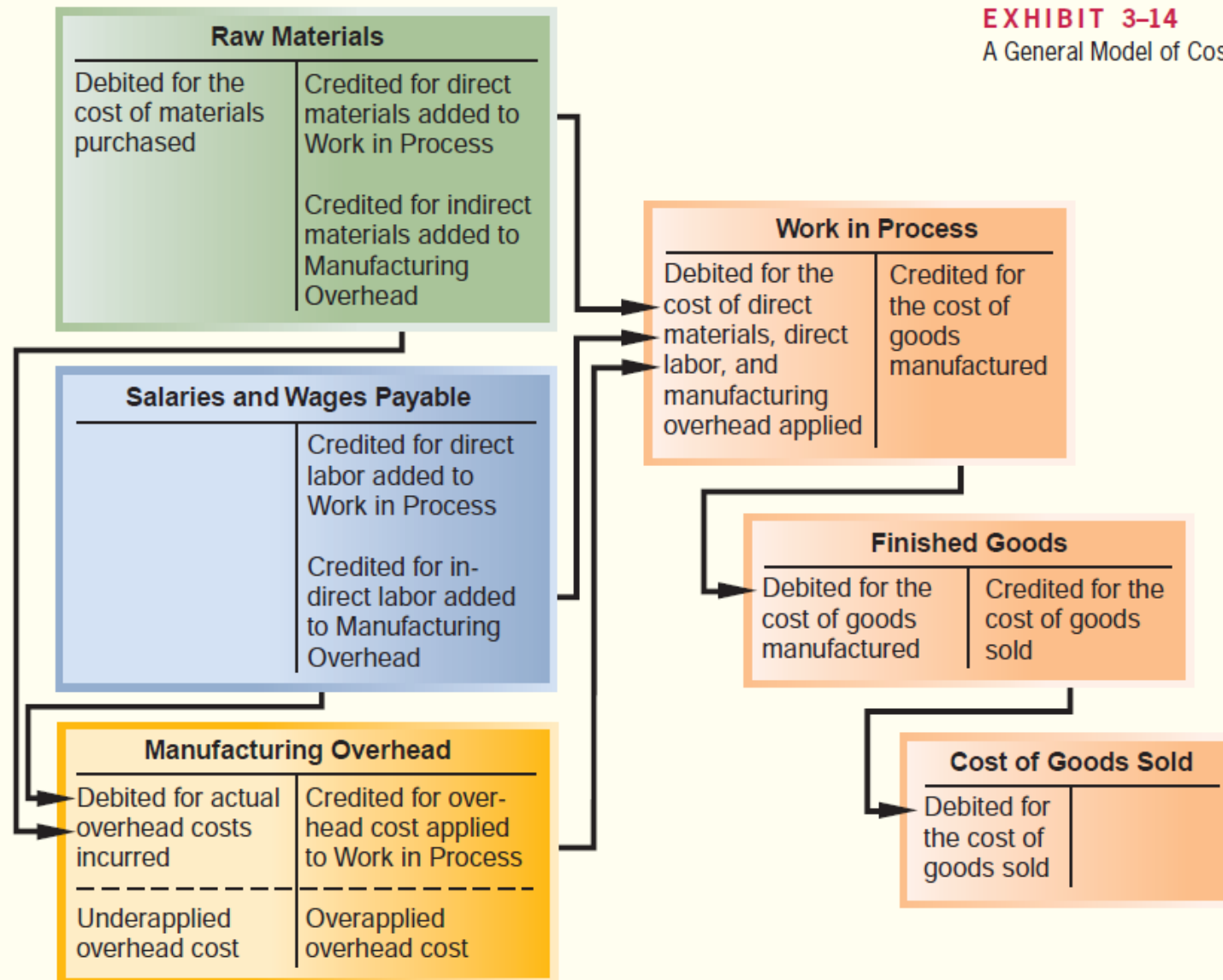
Many companies use a perpetual inventory system. Under this system, they still take a physical inventory and may make similar errors. The discovery of inventory errors requires careful analysis and adjusting entries to correct the company's accounts. If a company discovers a material error after it has closed the books, it treats the correction as a prior period adjustment. In this case it corrects the permanent (real) accounts. The company makes the corrections it would have made to temporary (nominal) accounts to Retained Earnings instead, as we discuss in Chapter 23.

## EXHIBIT 2-7

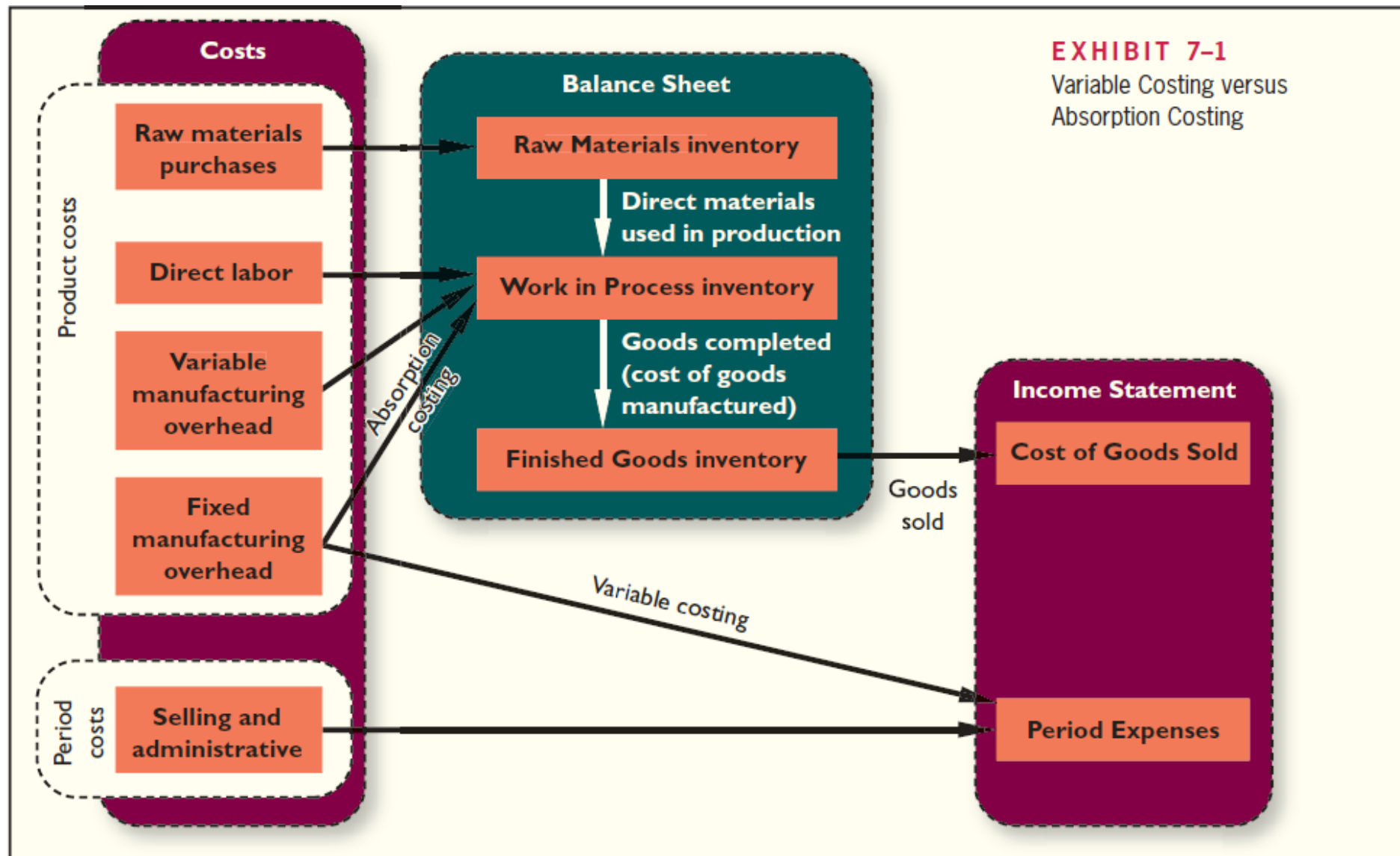
### Cost Flows and Classifications in a Manufacturing Company



**EXHIBIT 3-14**  
 A General Model of Cost Flows



**EXHIBIT 7-1**  
 Variable Costing versus  
 Absorption Costing





### Exhibit 9-3

### Comparative Income Effects of Variable Costing and Absorption Costing

Question	Variable Costing	Absorption Costing	Comment
Are fixed manufacturing costs inventoried?	No	Yes	Basic theoretical question of when these costs should be expensed
Is there a production-volume variance?	No	Yes	Choice of denominator level affects measurement of operating income under absorption costing only
Are classifications between variable and fixed costs routinely made?	Yes	Infrequently	Absorption costing can be easily modified to obtain subclassifications for variable and fixed costs, if desired (for example, see Exhibit 9-1, Panel B)
How do changes in unit inventory levels affect operating income? <sup>a</sup>			Differences are attributable to the timing of when fixed manufacturing costs are expensed
Production = sales	Equal	Equal	
Production > sales	Lower <sup>b</sup>	Higher <sup>c</sup>	
Production < sales	Higher	Lower	
What are the effects on cost-volume-profit relationship (for a given level of fixed costs and a given contribution margin per unit)?	Driven by unit level of sales	Driven by (a) unit level of sales, (b) unit level of production, and (c) chosen denominator level	Management control benefit: Effects of changes in production level on operating income are easier to understand under variable costing

<sup>a</sup>Assuming that all manufacturing variances are written off as period costs, that no change occurs in work-in-process inventory, and no change occurs in the budgeted fixed manufacturing cost rate between accounting periods.

<sup>b</sup>That is, lower operating income than under absorption costing.

<sup>c</sup>That is, higher operating income than under variable costing.